TOYOTA MARKII

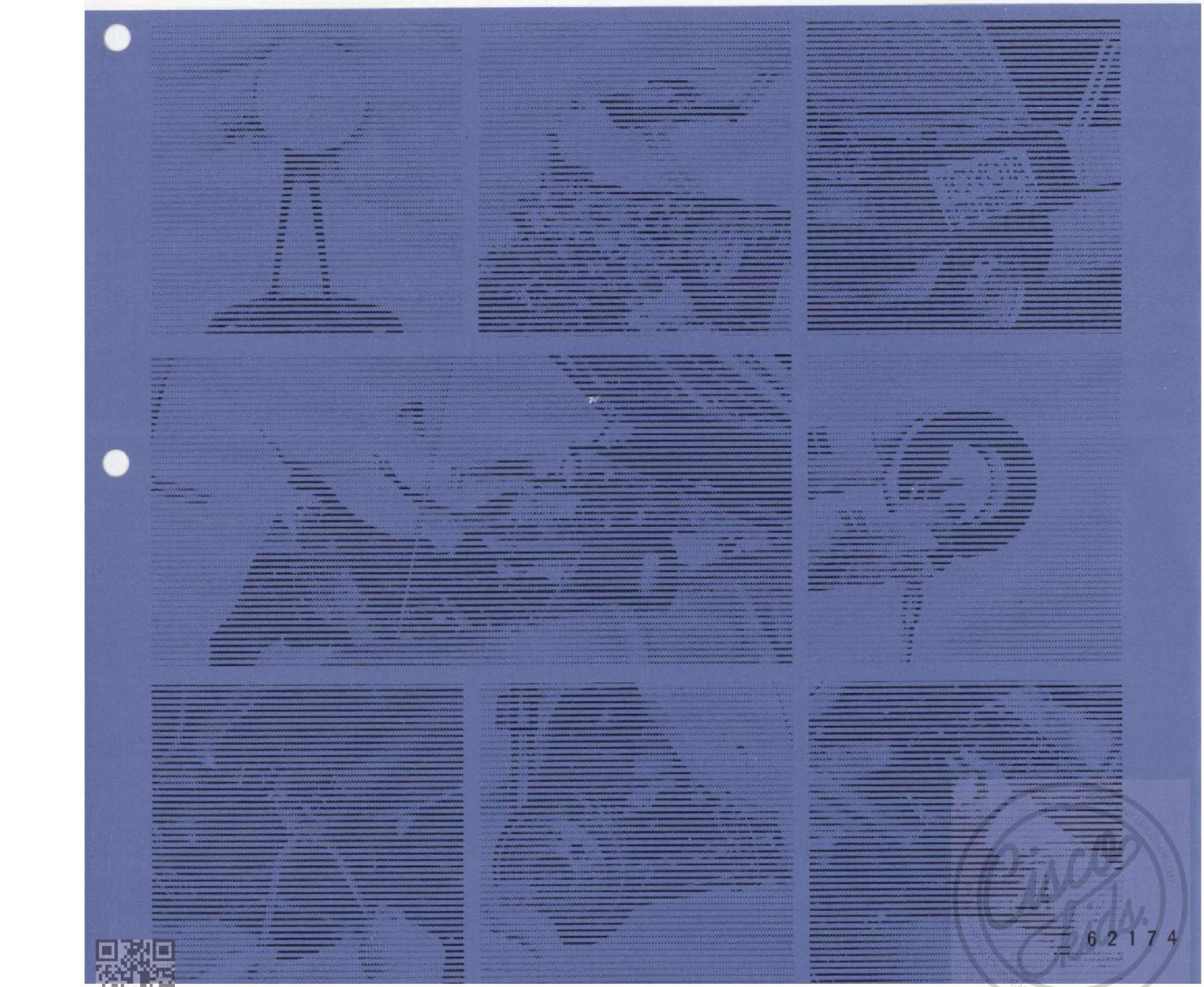
CHASER

CRESTA

Repair book

GX100系
JZX100,101,105系
LX100系

September 1996



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Overview 0
1G-FE Engine
1 JZ Engine
2 3 2L-TE
Engine Clutch 4
Manual Transmission 5
Transmission 6
7 Propeller Shaft
8 Suspension &
Axle 9 Drive Shaft 10
Differential 11 Brake
12 Steering 13
SRS Airbag 14
Body 15 Electrical
16 Heater
& Air Conditioner
17 Toyota
Electro Multivision 18 Oil and
Cooling Water 19 Regular Inspection
and Maintenance
Standard Values 20

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Introduction

This manual explains maintenance procedures for Mark II, Chaser, and Cresta. Please use it as a reference for performing correct, quick and safe maintenance of this vehicle.

In addition to this manual, the following materials have been issued as maintenance-related materials for this vehicle, so please use them together. This document covers vehicles produced as of September 1996. Please note that the contents of this document may differ from the contents of this document due to changes in specifications for vehicles produced after that.

■ Related documents

capital fee Overview	Product number	Issue year month
Mark II new model car manual	6 1 7 0 4	1996 September
Chaser New Model Manual	6 1 7 0 5	September 1996
Cresta new car manual	6 1 7 0 6	1996 September
1G-FE engine repair book	6 3 0 1 9	February 1989
1JZ-GE, 1JZ-GTE, 2JZ-GE, 2JZ-GTE Engine Repair Manual	6 3 0 3 6	December 1992
2L, 2L-TE, 3L engine repair manual	6 3 0 4 3	April 1994
W555658 Manual Transmission Repair Book	6 3 2 4 5	1992 January
R154150F 151F Manual Transmission Repair Book	6 3 2 5 6	March 1995
A414#D· 4#DL4#DE Automatic Transmission Repair Book	6 3 2 5 8	April 1995
A340E Automatic Transmission Repair Book	6 3 2 5 4	July 1994
A340E (ECT-i) Automatic Transmission Repair Book	6 3 2 5 3	July 1994
A340H Automatic Transmission Repair Book	6 3 2 4 8	1993 May
Mark II, Chaser, Cresta wiring diagram collection	6 7 4 7 6	September 1996

Toyota Motor Corporation
Service Department

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0 Review

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"Caution for vehicles equipped with SRS airbags"

This section contains service tasks that affect SRS airbags. For applicable maintenance work, see the Table of Contents and titles in the text.

There is a star in front, so please read the precautions for SRS airbags in this manual before starting work.

Vehicle model list ····· 0-2

Mark ····· 0-2 0-3

II Chaser ·····

Cresta ····· 0-4

How to read this manual ····· 0-5

Scope of explanation for repair work ····· 0-5

How to read the description ····· 0-5

Definition of terms ····· 0-14

About SI units ····· 0 - 14

略語説明 ····· 0-15

★Working rules and precautions ····· 0-16

General notes/ ····· 0 - 16

electrical system ····· 0-17

Removal and installation of fuel system parts ····· 0 - 18

Removal and installation of engine intake system parts ····· 0 — 19

hose clamp ····· 0 — 19

Precautions for installation of wireless devices, etc. ····· 0-19

★ Precautions for inspection and maintenance ····· 0-20

★SRS airbag ····· 0-20

Traction control (TRC) ····· 0-21

head lamp .... ····· 0 — 21

VSC (Vehicle Stability Control) ····· 0-21

Character light type license plate ····· 0 - 22

Precautions for full-time 4WD vehicle inspection ····· 0 - 22

and maintenance About 4WD system (A340H+UF1AE) ····· 0 - 22

Precautions when towing a full-time 4WD vehicle ····· 0 — 23

New diagnosis system ····· 0-24

Overview of the new diagnostic system ····· 0 - 24

Diagnostic Tool S2000 Features ····· 0 - 24

How to use the diagnostic tool S2000 ····· 0 - 25

Consolidation and abolishment of diagnostic connectors ····· 0-25

lifts, jacks and

Rigid rack support position ····· 0 - 26

Tightening bolts and nuts ····· 0 - 29

Tightening torque for general ····· 0 - 29

standard bolts and nuts

Tightening torque when installing · 0-30

Precoated bolt ····· 0-31

Plastic area tightening bolt ····· 0 - 31

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Vehicle model list

Mark II

	engine type	Transmission type	grade			
			Grande G	Grande	Grande Four	GL
Luxury リー	2JZ-GE (3.0L petrol)	A340E (4A/T・ECT-iE)	E-JZX101-ATPZF			
	1JZ-GE (2.5L gasoline)	A340E (4A/T・ECT-E)	E-JZX100-ATPZF	E-JZX100-ATPQF		
		A340H+UF1AE (4A/T・ECT)			E-JZX105-ATPQF	
	1G-FE (2.0L gasoline)	A42DE (4A/T・ECT)		E-GX100-ATPQK		
		W57 (5M/T)		E-GX100-ATMQK		
	2L-TE (2.4L Diesel)	A43D (4A/T)		KD-LX100-ATPQT		KD-LX100-ATPNT
	engine type	Transmission type	grade			
			Tourer V	Tourer S	tourer	
sport テイー	1JZ-GTE (2.5L petrol)	A341E (4A/T・ECT-iE)	E-JZX100-ATPVZ			
		R154 (5M/T)	E-JZX100-ATMVZ			
	1JZ-GE (2.5L gasoline)	A340E (4A/T・ECT-E)		E-JZX100-ATPSF		
	1G-FE (2.0L gasoline)	A42DE (4A/T・ECT)			E-GX100-ATPSK	

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chaser

	engine type	Trance Mission model	grade			
			Avante G	Avante	Avante Four	XL
Luxury	2JZ-GE (3.0L petrol)	A340E (4A/T · ECT-iE)	E-JZX101-BTPZF			
	1JZ-GE (2.5L gasoline)	A340E (4A/T · ECT-E)	E-JZX100-BTPZF	E-JZX100-BTPQF		
		A340H+UFIAE (4A/TECT)			E-JZX105-BTPQF	
	IG-FE (2.0L petrol)	A42DE (4A/T · ECT)		E-GX100-BTPQK		
		W57 (5M/T)		E-GX100-BTMQK		
	2L-TE (2.4L Diesel)	A43D (4A/T)		KD-LX100-BTPQT		KD-LX100-BTPNT
Sporte	engine type	Transmission type	grade			
			Tourer V	Tourer S	tourer	
	1JZ-GTE (2.5L petrol)	A341E (4A/T · ECT-iE)	E-JZX100-BTPVZ			
		R154 (5M/T)	E-JZX100-BTMVZ			
	1JZ-GE (2.5L gasoline)	A340E (4A/T · ECT-E)		E-JZX100-BTPSF		
	1G-FE (2.0L petrol)	A42DE (4A/T · ECT)			E-GX100-BTPSK	

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Cresta

	engine type	Transmission type	grade				
			Exceed G	Exceed	super lucent	Super Lucent Four	SC
Luxury リ	2JZ-GE (3.0L petrol)	A340E (4A/TECT-iE)	E-JZX101-CEPZF				
	1JZ-GE (2.5L gasoline)	**A340E (4A/T・ECT-E)**	E-JZX100-CEPZF	**E-JZX100-CEPUF**	E-JZX100-CEPQF		
		A340H+UF1AE (4A/TECT)				E-JZX105-CEPQF	
	1G-FE (2.0L petrol)	**A42DE (4A/T・ECT)**		E-GX100-CEPUK	E-GX100-CEPQK		
		W57 (5M/T)			E-GX100-CEMQK		
	2L-TE (2.4L Diesel)	A43D (4A/T)			KD-LX100-CEPQT		KD-LX100-CEPNT

	engine type	Transmission type	grade	
			Luran G	lulan
ボーティ	1JZ-GTE (2.5L petrol)	A341E (4A/T・ECT-iE)	E-JZX100-CEPVZ	
	1JZ-GE (2.5L gasoline)	**A340E (4A/T・ECT-E)**		E-JZX100-CEPSF

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How to read this book'

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Description scope of repair work

This manual is for "inspection and adjustment work". • I explained "detachment, replacement, disassembly/assembly" and "failure diagnosis".

How to read the description

1 Notes

(1) Added notes specific to the relevant section.

2 supplies

(1) SST, tools, instruments, grease, etc. that should be prepared before work are listed, and their purpose of use is also explained. However, among the prepared items, items that are considered to be always available at general maintenance shops have been omitted.

3 Work procedure

(1) The work procedure is described in the order of "check/adjustment work", "detachment/disassembly", and "failure diagnosis".

① Inspection and adjustment work

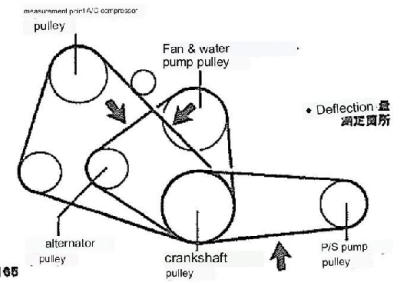
· Inspection of each system (basic function) Adjustment procedure is described at the beginning of each section. · General reference values are listed in a list

• or table. If there is a point, the point is written together or separately.

Description example

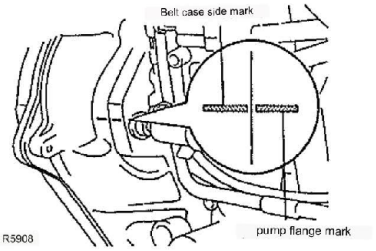
Inspection items	standard 值		領
Battery specific	1.25~1.29 (20℃)		
gravity V-belt tension	Reference value 種類	When a new product is installed [N{kgf}]	Swing time (N (kgf))
	for alternator	440~540 {45~55} (per bottle)	195~345 (20~35) (per bottle)
	For P/S pump	440~540 {45-55} (20-35)	195~345
	A/C compressor for	440-540 {45-55}	195-345 (20-35)
Amount of deflection [Pressing force 98N {10kgf}]	Reference value Type	When installing a new product [mm]	during inspection [mm]
	for alternator	7~10 (per bottle)	10~14 (per bottle)
	For P/S pump	8~10	10~15
	for A/C compressor	13~17	17~21
using an injection pump Mounting state	marks match		· For adjustment, move the pump body to align the marks. T=20.5N·m {210kgf·cm} (Nut) T=18N·m {185kgf·cm) (Bolt)

· Amount of deflection



注意 • When inspecting a belt that has been used for more than 5 minutes, use the reference value for "inspection". · When using a new V-belt for the alternator, perform a set of two.

Adjustments: Point 1



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㊀ Detachment, disassembly

・After inspection and adjustment work, we posted a configuration diagram (detachment and disassembly) and a cross-sectional diagram so that you can understand the installation state of the component parts. At the same time, the guidelines and explanations are posted so that the work content can be grasped.

[Removal (disassembly) configuration diagram (1)]

・In the configuration diagram, the names of parts required for attachment/detachment, non-reusable parts, pre-coated bolts, tightening torque, and oil/grease application points are specified.

〈参考〉 The torque value described in the configuration diagram is omitted from the explanation. Did.

・Parts that require special procedures for removal and installation should be , 詹 , minutes , The tax mark is described and described later.

Detachment.....There is a point when removing

Wearing・・・・・・・Things that need to be done when installing

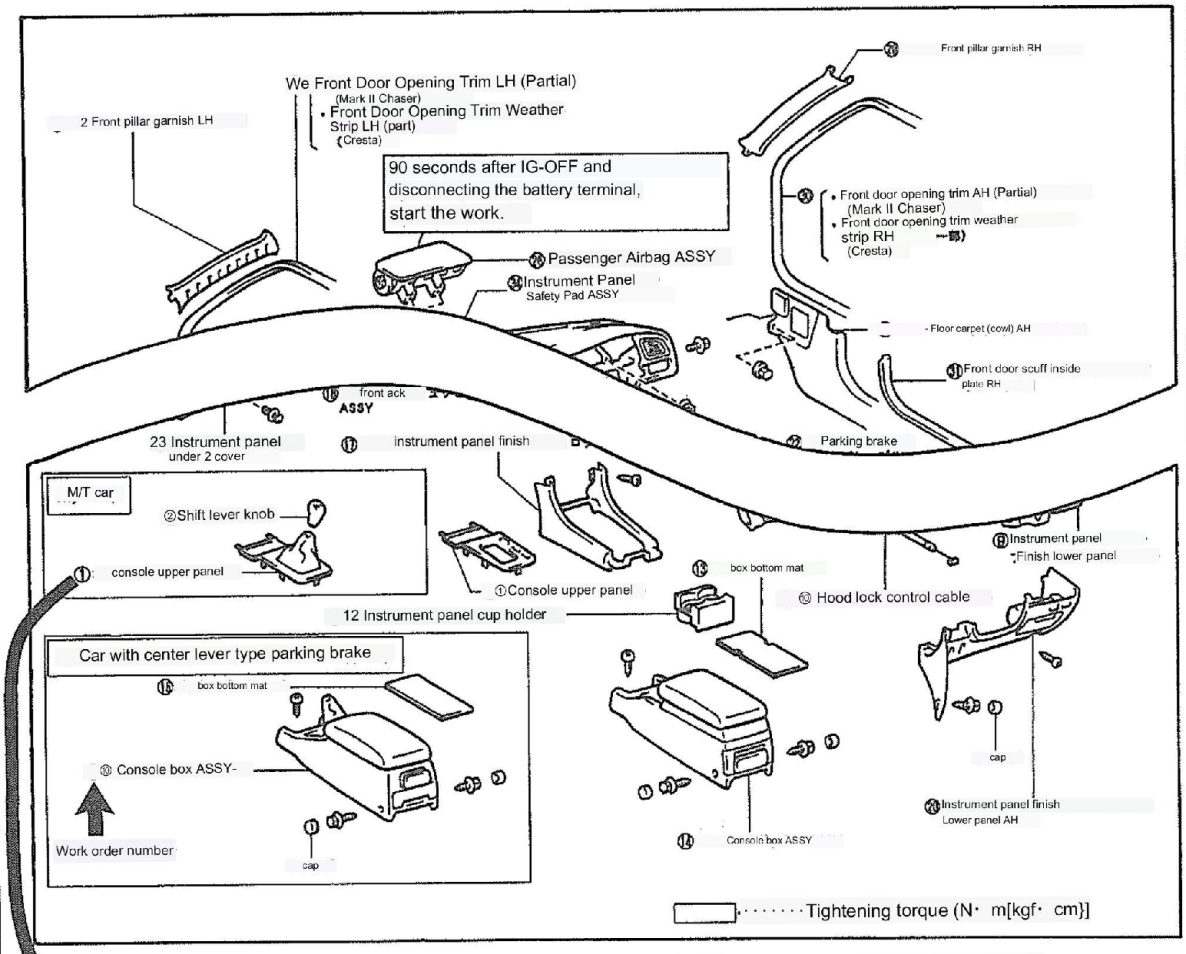
Minutes・・・・・・・

[Removal (disassembly) configuration diagram (2)]

・The work procedure number is described in the configuration diagram, and an illustration of the removal and installation procedure corresponding to the work procedure number is posted.

Description example

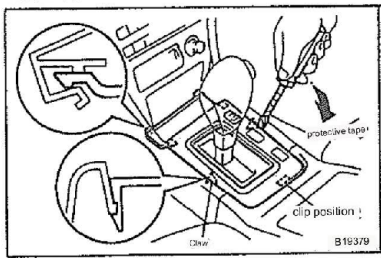
★Instrument panel ★Disassembled drawing



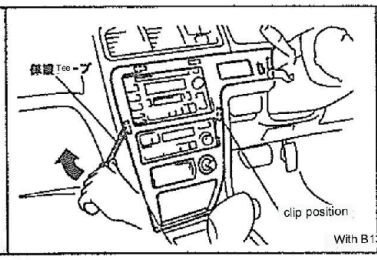
Procedures corresponding to work procedures

★Instrument panel safety pad Remove ASSY

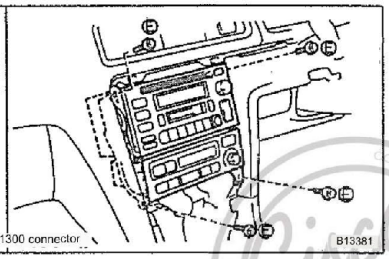
① ② (M/T car shift lever knob theory)



③



④



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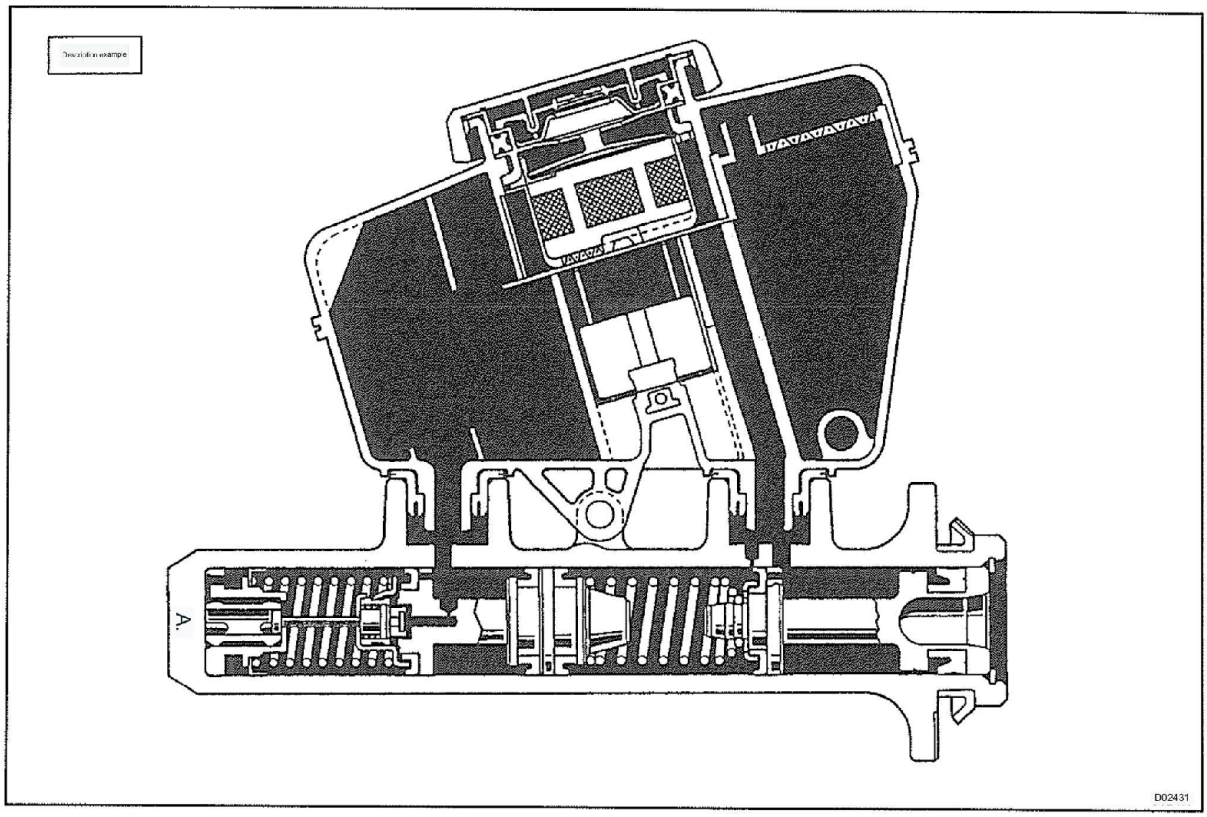
[Cross section]

· By including cross-sectional views as necessary, we have made it easier to understand the structure, operation and function.



[Procedure]

• Illustrations show work locations and work details, and explanations describe detailed work methods, information, standards and cautions.

I was.

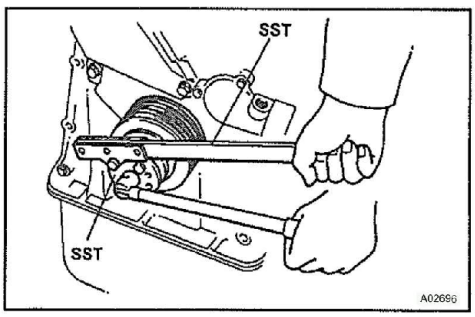


Illustration: Work part and work contents

· Small title

Removal and installation of crankshaft pulley

Work item

1 Install the crankshaft pulley

(1) Install the crankshaft pulley to the crankshaft.

(2) Fix the crankshaft pulley using SST and tighten the bolt. SST 09213-14010

CONTENT T-245N· 09330-00021

(2500kgf· cm) Information

standard

Description: How to work in detail

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⑦ Fault diagnosis

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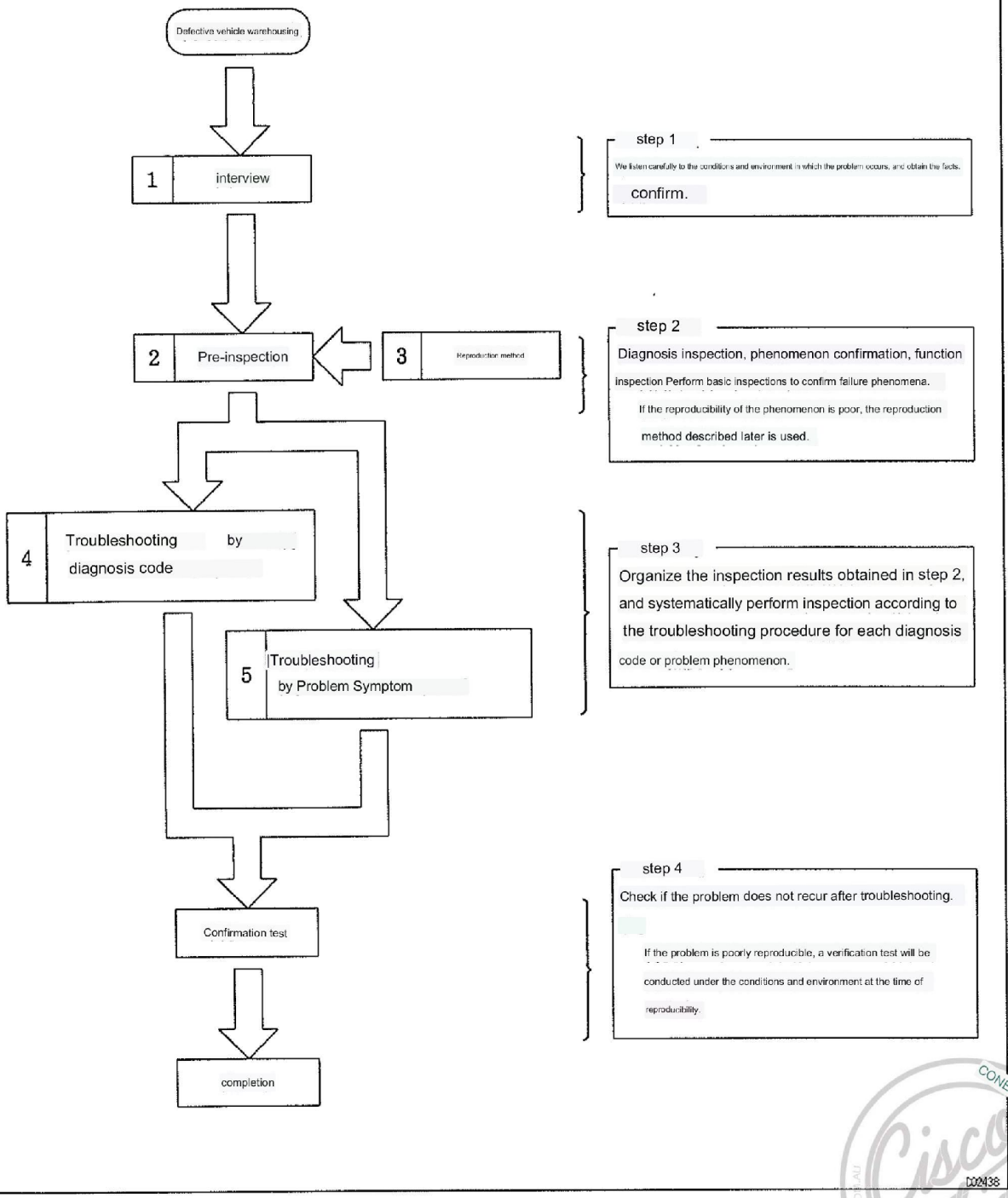
How to view and proceed with troubleshooting

Troubleshooting Steps The troubleshooting steps in this manual are illustrated in the steps below.



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1

(1) Fully grasp the contents of the customer's offer.

《参考》 Instead of asking questions blindly, we ask questions while narrowing down the target to the problem system presumed from the problem phenomenon.

(2) Accurately judge failure information.

Based on 5W1H, grasp concretely.

Examples: low temperature, when starting, all the time, near the engine, cracking noise, etc.

Points of interview

- What is ..... the problem?
- when ..... Month/day, time, frequency of occurrence
- where road ..... conditions
- What kind of condition ... driving condition, driving condition, weather
- How did it happen...How do you feel about the phenomenon?

2 Pre-inspection

The pre-inspection is carried out in the following steps.

Diagnosis check → Diagnosis erasure → Trouble phenomenon confirmation → Diagnosis reconfirmation

*If the problem is not reproducible, use a reproducible method

《Points to note when retesting》

Before the start of the reproduction test, presume the failure system, attach testers and confirm the phenomenon, and simultaneously perform the estimated failure judgment.

go to

Refer to the Troubleshooting Chart for probable causes of failure phenomena.

CAUTION If the problem occurs only momentarily, or if an error code is displayed but there is no problem, try to reproduce it.

Carry out each troubleshooting while using the method.

Trouble phenomenon confirmation

to reproduce → step 2 → step 3 → Carry out step 4

if not reproducible → Reproduction method

- Adjust external conditions
- Check each wire harness and connector parts

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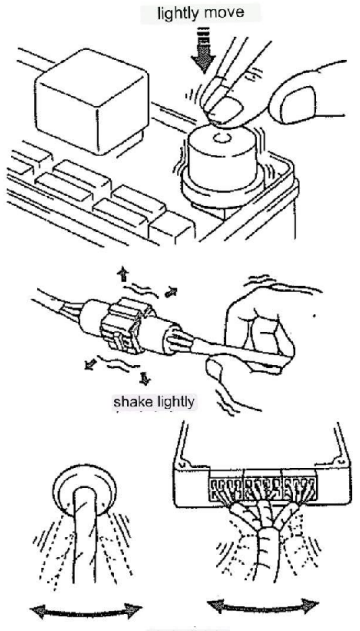
3 Reproduction method

1 Vibration method If vibration is thought to cause a problem (1) Apply vibration



[Components, Sensors]

such as lightly tapping the part of the probable cause system to remove the problem.

Check for any problems. Note:

Relays may open their points if a strong impact is applied.

[W/H, connector]

(1) Shake the W/H lightly up and down and left and right to check if there is any problem.

<Reference> In particular, wire harnesses should be checked intensively at the roots of connectors, points of vibration, and penetrating parts of the body.

(2) Visually check if there is any disconnection or floating of the terminal when the connector is engaged.

do. (3)

Lightly pull the wire harness of the connector part one by one to check that there is no disconnection. (4)

Disconnect the connector and check the bending and alignment of the male terminal.

do. (5)

Disconnect the connector and deform the female terminal such as opening the joint Check that there are no (6)

Check that the contacts of the connectors of each part are not dirty or rough.

be.

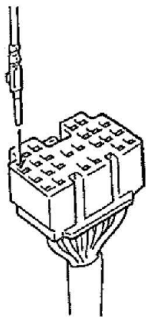
(7) When the connector is connected to the parts, the wire harness shall not apply excessive force to the connector. That is, make sure there is adequate slack in the wire harness.

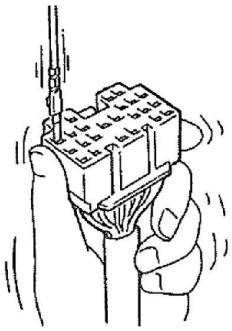
<Reference> Inspection of terminal contact

pressure ① Disconnect the connector.

(2) With the mating surface of the female (female) connector facing up, gently place the male (male) terminal on the female terminal.

(3) Hold the female connector by hand and gently shake it from side to side until the inspection mail terminal self-removes. Check if it sinks under heavy weight.





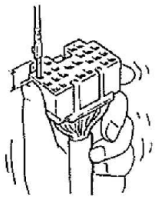
NOTE

- For the mail terminal unit, cut Prepare a mail-side repair wire of the same model as the terminal to be the inspection harness.
- Forcibly inserting the male terminal may weaken the contact pressure of the female terminal due to prying, etc.

<Judgment criteria>

- At a position where the constriction of the mail terminal can be clearly seen.
- The constriction of the mail terminal is hidden by the connector.

With contact pressure OK



No contact pressure NG

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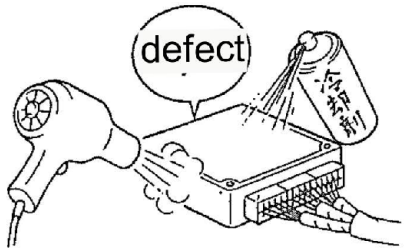
Terminal repair method

- If the contacts are dirty, use an air gun or waste cloth to clean the contacts. At this time, never polish the contact points with sandpaper or the like. (because the plating on the surface is peeled off)
- If the contact pressure is abnormal, replace the female terminal. At this time, if the corresponding male terminal on the component side is gold-plated (gold), use a gold-plated female terminal, and if it is tin-plated (silver), use a tin-plated female terminal.
- If there is no problem with the contacts, clean the contacts with an air gun and apply a very small amount of non-hygroscopic oil such as clean engine oil or gear oil. (This prevents contact oxidation and wear.)

2 Cold/heat method if you think it will happen 	[parts] Use a hair dryer or coolant to heat or cool the parts of the suspected faulty system and check for any faults. · When heating, keep it above +60°C do not, have. · Do not open the lid of the ECU to heat or cool the electronic parts directly. (Reference) Coolant is available at electronic parts stores.
3 water method ····· · When it seems that a problem occurs in rainy weather or high temperature 	[vehicle] Spray the vehicle with water and check for any defects. • Do not spray water directly on the engine compartment, the radiator Indirectly change the temperature and humidity by spraying on the front like a mist spray. be. Do • not spray water directly on electronic parts.

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troubleshooting

(1) Troubleshooting is mainly shown in flowcharts or lists.

(2) Troubleshooting is described in two types: "By Diagnosis Code" and "By Problem Phenomenon". (3) Layout diagrams, relationship diagrams, and connector names are also included as necessary to make it easier to understand.

記載例

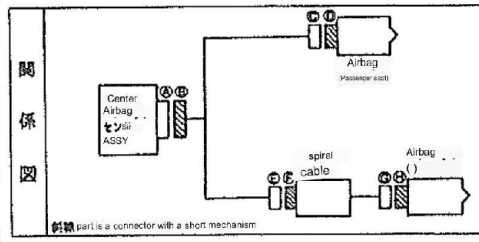
2	DIAG 11	Ignition circuit (short circuit to ground)

commentary

・The ignition circuit consists of the center airbag sensor assembly, spiral cable (with built-in combination switch) and airbag. This circuit outputs an ignition (deployment) signal when the deployment conditions are met, and deploys the airbag.

・When the code "11" is memorized, if the problem cannot be determined even after performing the inspection according to the flow chart below, check the airbag related parts. (including wire harness).

関係図



tool ④ 内 Details

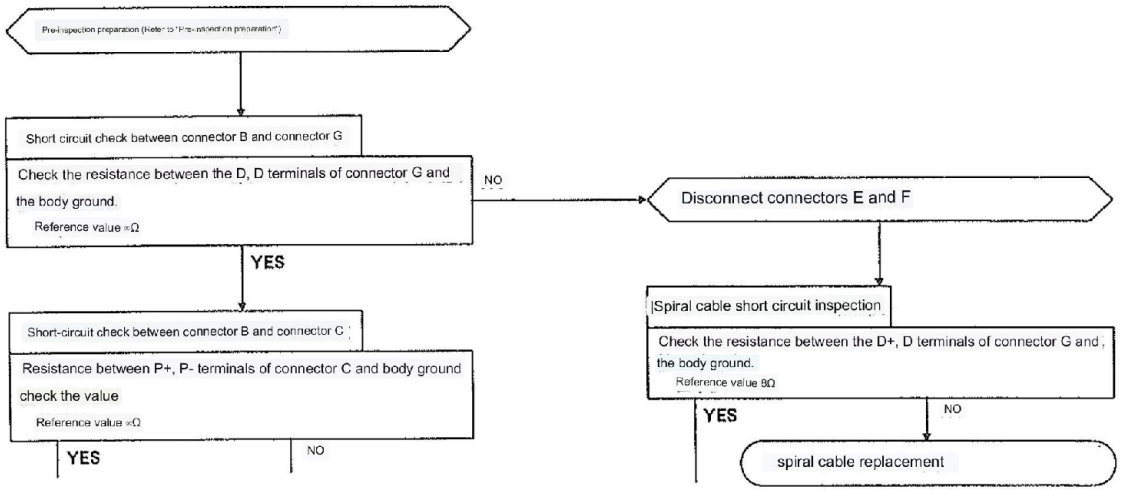
No ① D+~D", Pt~P terminals are shorted to ground

② Airbag internal failure !

③ Spiral cable internal failure

Center airbag sensor ASSY internal failure

(The center airbag sensor circuit is always ON. Internally D+, power supply circuit failure)



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Content omitted in 4 books

(1) This book omits the description of the following elemental work, but please perform it in the actual work.

① Jacking and lifting work.

(2) Clean and wash detached parts as necessary.

③ Visual inspection.

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Definition of terms

standard値	Represents the allowable range for inspection and adjustment.
limit	Indicates the maximum or minimum value that should not be exceeded during inspection and adjustment.
Reference	Since it is extremely difficult to determine the reference value by means of a measurement method, it is recommended to use a simple measurement method when there is practically no risk of failure. represents the reference value in
Note	This section describes what you should not do, such as prohibited work. In addition, matters to be particularly noted in the work procedure has been published.
〈参考〉	Supplementary explanations to facilitate the work are posted separately from the explanations.

JB3511

About SI units

1 What is the SI unit?

(1) This book introduces the SI unit system. The SI unit is an international system of units established for the purpose of unifying conventional internationally different unit systems into one unit for each quantity and facilitating technical exchange. (2) SI in SI units is the acronym for Le Système International d'Unites in French.

2 New unit due to introduction of SI unit

	new unit	traffic unit	Converted value 1 (1[conventional unit]=X[SI unit])		new unit	always the first place	Conversion value *1 (1 [conventional unit] = X [SI unit])
力*2	N (Newton)	kgf	1kgf=9.80665N	Spring constant *2	N/mm	kgf/mm	1kgf/mm=9.80665N/mm
Torque * 2 (moment)	N•m	kgf cm	1kgf•cm=0.0980665N•m	volume	L	cc	1cc=1mL
pressure *2	Pa (Pascal)	kgf/cm²	1kgf/cm²=98.0665kPa =0.0980665MPa	efficiency	W	PS	1PS=0.735499kW
		mmHg	1mmHg=0.133322kPa	amount of heat	Wh	cal	1kcal=1.16279W・h
Rotational speed	r/min	rpm	1rpm=1r/min	fuel consumption rate	g/W•h	g/PS•h	1g/PS•h=1.3596g/kW•h

*1: X is the value when 1 [conventional unit] is converted to SI unit, and is also used as a conversion factor from conventional unit to SI unit. *2: Kilogram [kgf], which is the unit of force, was used instead of kilogram [kg], which is the unit of mass.

JA7023

3 Conventional units Conversion of SI units

(1) Conversion formula

Value in SI units = conversion factor x value in conventional units

Value in conventional units = value conversion factor in SI units

Conversion factor: The number corresponding to X in the middle conversion value column of 3 above

Note When converting, make the unit of the value of the conventional unit or the value of the S!

In other words, if 100W is converted to the conventional unit of PS, it is taken as 0.1kW and then divided by the conversion factor of 0.735499.

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Abbreviations

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Abbreviations	明	Abbreviations	說 Ming
ABS	antilock braking system	ISCV	Idle speed control valve
A/C	air conditioner	J/B	junction block
ACIS	Variable intake system (acoustic vibration type)	LED	light emitting diode
ACSD	automatic cold start device	LH	left
ACV	air control valve	LLC	long life coolant
ASSY	assembly	LSD	limited slip differential
ASV	air switching valve	LSP	load sensing proportioning
A/T	automatic transmission, automatic transaxle	& BV	& bypass valve
		LSPV	load sensing proportioning valve
AV	Audio & Visual	MPX	Multiplex network (body multiplex communication)
BTDC	before top dead center	M/T	manual transmission, manual transaxle
BVSV	Bimetal vacuum switching valve		
CBs	Circuit breaker	O/D	Overdrive
CDs	compact disc	OPT	option
CRT	CRT	O/S	oversize
DATs	digital audio tape recorder	PCV	Positive crankcase ventilation
DLI	Distributorless ignition	PKB	Parking brake
DSCS	diesel smoke control system	PPS	Progressive power steering
EACV	Electronic air control valve	P/S	power steering
ECD	Electronic control diesel	PTO	power take off
ECT	electronic control transmission	R & P	Rack & pinion
ECU	electronic control unit	R/B	relay block
EFI	electronic fuel injection	RH	right
EGR	Exhaust gas recirculation system	ROM	Read-only memory
EHC	Vehicle height adjustment	RR	rear
ELR	device Emergency lock type winding device	SCV	swirl control valve
EMV	Electro multi-vision electronic	SRS	occupant protection aid
ESA	system	SST	Toyota genuine special tool
ETCS	Electronic throttle control system	STD	Standard
EX	Exhaust	SW	switch
FIPG	Liquid molded gasket	T=	Tightening torque
FL	fusible link	TCCS	toyota computer controlled system
FR	before	TDC	top dead center
GPS	Global positioning system	TEMS	Toyota electronically controlled suspension system,
HAC	Altitude compensator 置	TRC	traction control
HCV	heat control valve	U/S	Undersized
HIC	hot idol compensator	VCV	vacuum control valve
IACV	intake air control valve	VICS	road traffic information system
IG	ignition	VSC	Vehicle stability control (vehicle stability control)
IIA	centralized ignition system	VSV	vacuum switching valve
IN	intake	VTVs	vacuum transmitting pulp
IRS	Independent rear suspension	VVT-i	Continuous variable valve timing mechanism
ISC	Idle speed control device	W/	With (AW/B: A including B)

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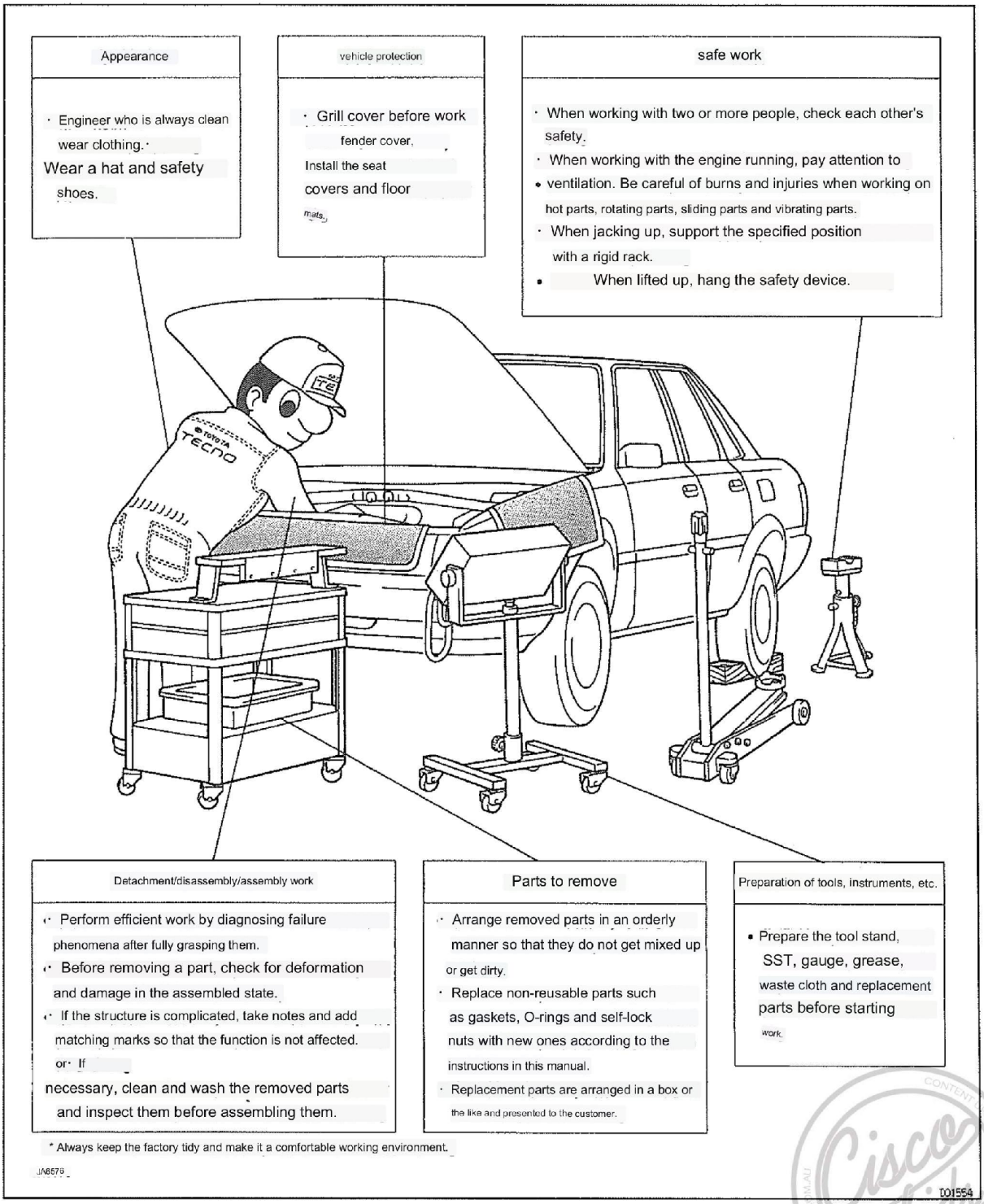
★Working rules and precautions

General note



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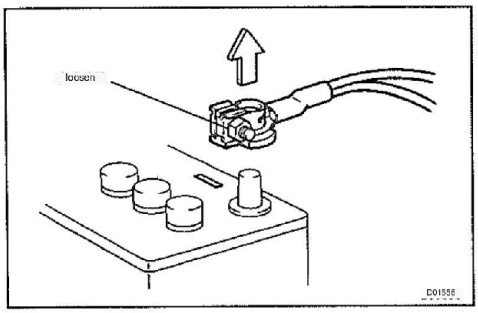

electrical system

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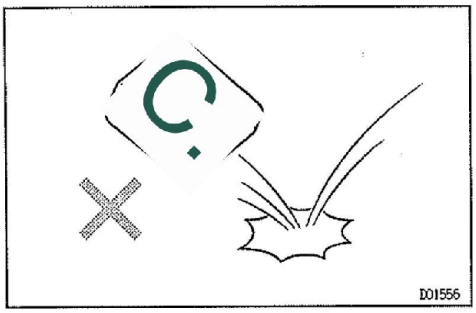
1 Detach the battery terminal

(1) When working on the electrical system, to prevent burnout due to short circuits, Remove the battery terminals beforehand.

(2) When removing the battery terminal, turn off the ignition switch and lighting switch, and completely loosen the terminal nut so as not to twist it.

(3) If the battery terminal is removed, the memory of the clock, radio, diagnosis, etc. will be erased, so check the contents beforehand.

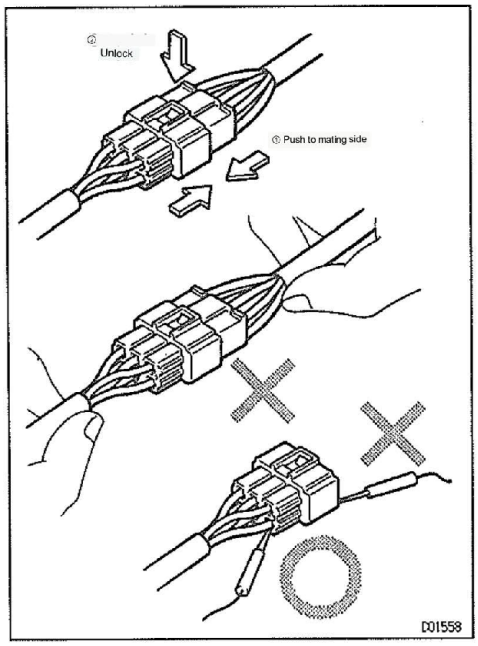


2 Handling electronic components

(1) Do not give shock to electronic parts such as computers and relays.

(2) Do not expose electronic parts to high temperature and high humidity.

(3) Do not touch the connector terminals as they may cause deformation or static electricity.



3 Handling of connectors

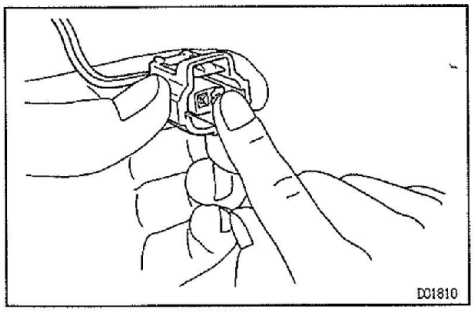
(1) When disconnecting a connector with a lock, push the connector toward the mating side to make it easier to move the lock claws before unlocking. (2) When disconnecting the connector, hold the connector without holding the harness. carry out (3) Before connecting the connector, confirm that there is no deformation, damage or disconnection of the terminal.

(4) Firmly insert the connector with a lock until you hear a locking sound.

(5) When inspecting the connector with the Toyota Electrical Tester, From the back side (harness side) of the connector using the mini test leads.

(Note) · The waterproof connector cannot be inspected from the back side of the connector. Therefore, connect the sub-harness and check.

• Do not damage the terminal by moving the inserted tester rod recklessly.



4 Toyota genuine connector grease

(1) Connectors in places where water is likely to be splashed, such as alternators and headlamps, are filled with grease (white) to prevent terminal corrosion.

(2) Insufficient connector or repaired terminals 100g) by hand. Note:

Do not allow dust to adhere.

• Do not use a tool such as a screwdriver to fill the battery.

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noodles double steamed

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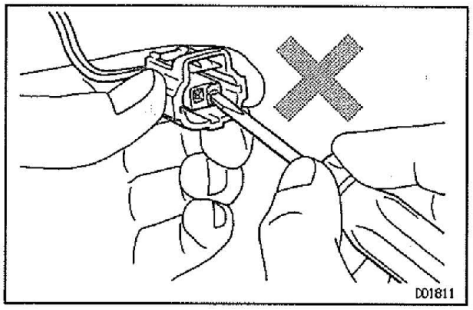
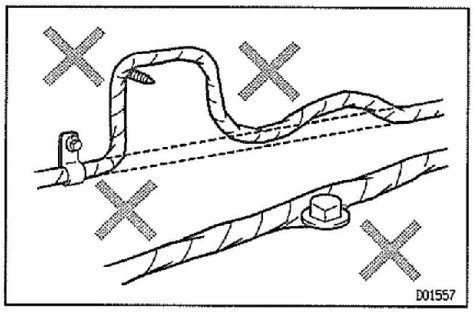


(3) There is no problem if grease adheres to the O-rings and rubber plugs of the waterproof connector, but if it adheres to other rubber parts (weather strips, wire harness grommets, etc.), there is a risk of deterioration and discoloration. In the unlikely event that it adheres, wipe it off immediately.



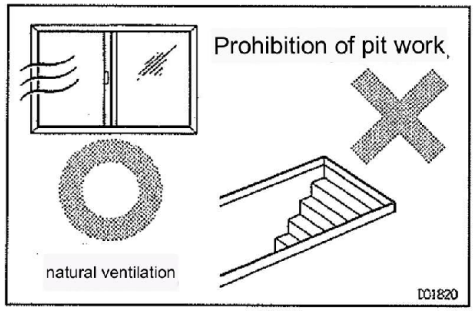
5 Handling of wire harness

(1) When removing the harness, arrange it around and clamp it before starting work. Check the status of the backup to ensure that restoration can be performed. (2) Do not twist, pull, or slack the harness unnecessarily.

(3) Do not let the harness interfere with high-temperature parts, rotating parts, sliding parts, vibrating parts, and sharp-angled parts (panel edges, screw tips, etc.).

(4) When installing parts, do not let the harness get caught.

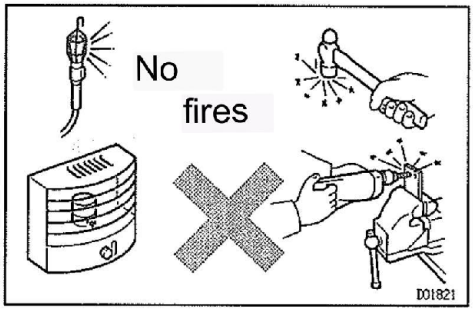
(5) Do not break the sheath of the harness. If torn, replace or vinyl Be sure to fix it with tape.



Removal and installation of fuel system parts

1 Location for removing and installing fuel system parts

(1) Work in a well-ventilated area and away from flames such as welders, grinders, drills, electric motors and stoves. (2) Do not work in or near pits where vaporized fuel may fill.



2 Removal and installation of fuel system parts

(1) Prepare a fire extinguisher before starting work.

(2) To prevent static electricity, attach a ground wire to the fuel changer, vehicle, fuel tank, etc. and ensure that your feet are smooth. water as much as possible.

(3) Electrical equipment such as electric pumps and work lights should be Do not use as it may become hot.

(4) Do not use iron hammers, etc., as they may cause sparks during work.

(5) Segregate the rags with fuel on them.

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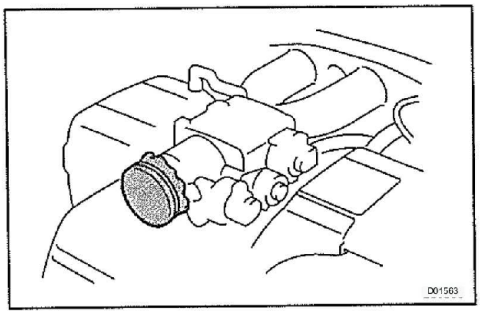

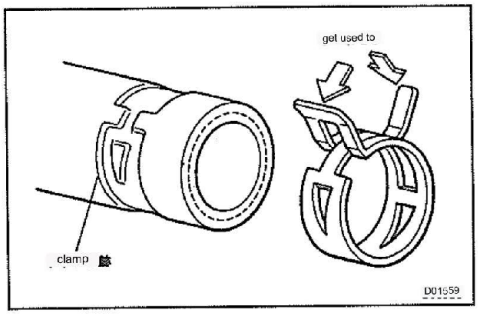

Removal and installation of engine intake system parts

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1 Removal and installation of air intake system parts

(1) If a piece of metal or the like enters the intake path, the engine body and turbo may be damaged. adversely affect chargers, etc. (2) When removing or installing air intake system parts, remove the removed air intake system parts. and the opening on the engine side with a clean waste cloth or packing tape. (3) When installing intake system parts, make sure that there are no pieces of metal mixed in. to confirm.

hose clamp

1 Handling hose clamps

(1) Before removing the hose, check the insertion depth and clamping position of the hose to ensure that it can be restored.

(2) Replace deformed or sagging clamps with new ones.

(3) When reusing the hose, attach the clamp to the hose clamp mark. Install together. (4) Apply force in the direction of the arrow after attaching the leaf spring clamp.

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Precautions for installation of wireless devices, etc.

When installing a mobile communication device such as a radio, the following precautions should be taken. Please follow the paragraph.

(1) Install the antenna as far away as possible from the vehicle's electronic systems such as computer sensors. (2) Antenna cords are used in vehicle electronic systems such as computer sensors. Install at least 20 cm from the stem.

(3) Do not put the antenna cord and other wiring together. Also, separate the antenna cord and other wiring as much as possible.

(4) For retrofitted items, be sure to install them according to the individual installation instructions. wear. (5) Do not install high-power mobile communication equipment.

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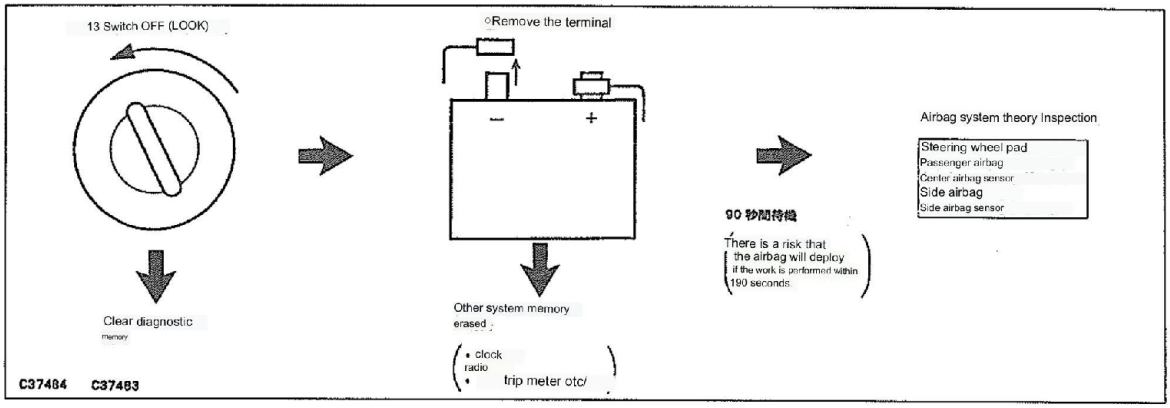
★ Precautions for inspection and maintenance

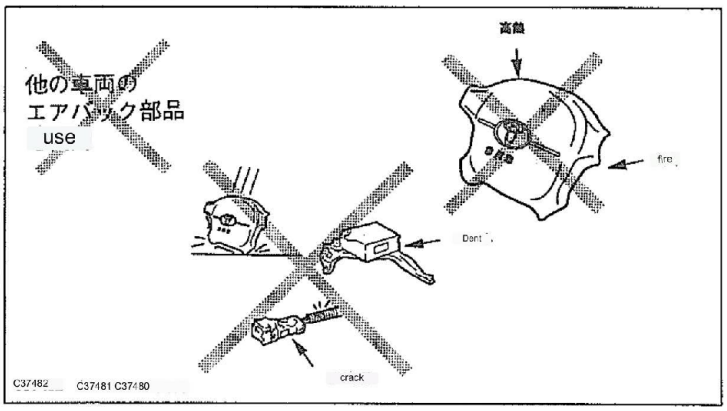
★SRS airbag

General notes

1 Removal and installation of airbag system, preparation for inspection



2 Handling of airbags after removal and inspection



When replacing parts, replace with new parts.

<Reference> There are labels attached around the airbag system that describe precautions, so follow the instructions.

Treatment of vehicles damaged in collisions, etc.

1.When using an electric welder, remove the airbag before starting work.

2. When working on body sheet metal (especially near the center biller), etc., be sure to exercise caution as there is a risk of injury due to malfunction.
Remove the airbag sensor before working on it.

3. Do not expose the sensor to high temperatures

Cases requiring inspection of the SRS airbag

<Reference> In the following cases, inspect each component of the SRS airbag system.

1. When the vehicle is damaged due to a collision, including minor non-deployment of airbags 2. When a diagnosis code is output

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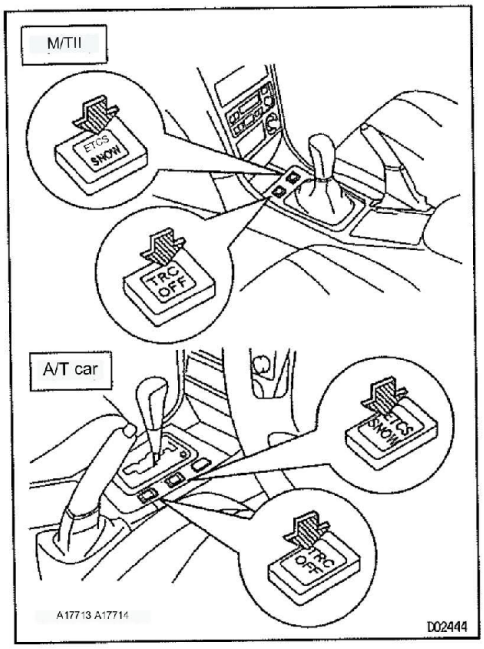
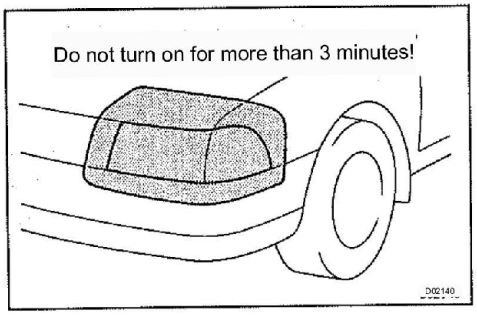


Traction control (TRC)

1 Precautions when using a two-wheel drum tester

(1) When measuring with a two-wheel drum tester such as a speedometer tester, speedometer tester/brake tester combined machine, or chassis dynamometer, turn off the TRC with the TRC OFF switch before making measurements.



head lamp

1 Precautions when using the headlamp cover

(1) When using the cover while the headlights are on, do so for at least 3 minutes.

do not have

〈参考〉 • Since the outer lens of the headlamp is made of resin, it can be used for a long time. Doing so may cause deformation due to heat.

• If only one headlamp is left on for a long time, disconnect the connector of the other headlamp.

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VSC (Vehicle Stability Control)

1 Precautions when removing the battery terminal

(1) When installing the battery terminal, it is necessary to initialize the yaw rate sensor value used by VSC. Work in order.

(1) Apply the parking brake, shift the shift lever to P, and connect the battery terminal.

② Turn on the ignition switch. At this time, do not move or shake the vehicle for about 15 seconds. ③ Confirm that the VSC warning lamp is off. If the VSC warning lamp

(2) Even after performing the above operation, does not turn off even after the above period has passed, turn off the ignition once. turn off the switch for 1 minute and perform the operation

〈参考〉 of ② again. If the warning lamp does not turn off after one operation, "DIAG 36" may remain as a past failure.

2 Precautions when using the drum tester

(1) When using a drum tester, be sure to turn off the ignition switch to disable the VSC.

— Start the engine with the sys-connector TE and short-circuited, and take

注意 measurements.· Confirm that the VSC warning lamp is blinking.

- Secure the vehicle with a lock chain.

3 Precautions when working with VSC

(1) Do not attach or detach VSC-related parts unless necessary, as there is a risk of misalignment due to attachment or detachment. (2) When performing VSC-related work, follow the instructions in the main text to ensure that preparations are made before work is completed, and that work is completed.

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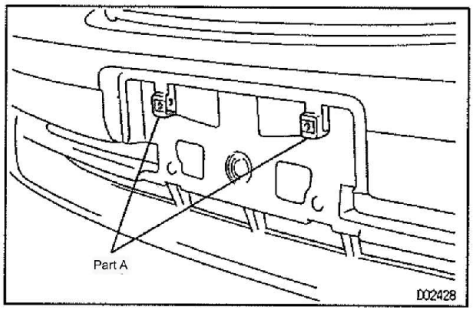
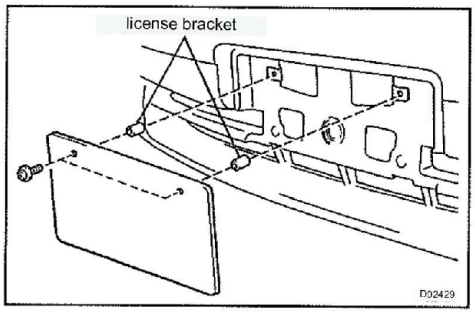


light type license plate

a one-digit optical license plate

(1) Cut off part A of the front bumper.

(2) Replace the case nut to the bumper, light type license plate to install.



<Reference> When installing a normal license plate to a car with an illuminated license plate, use a license bracket (part number: 90560-11020) and a bolt (part number: 93313-16035).

Precautions for full-time 4WD vehicle inspection and maintenance

About 4WD system (A340H+UF1AE)

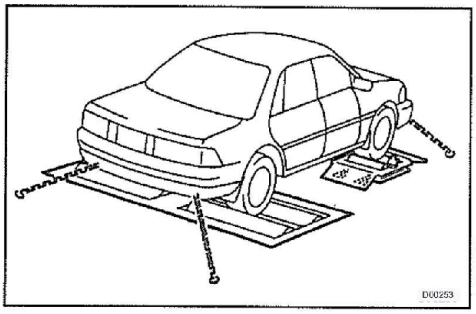
Tester with two-wheel only load setting mechanism (two-wheel only power absorber

Models next to: 2-wheel chassis dynamometer, 2-wheel chassis sea dynamometer and speedometer tester and brake

Rake tester combination machine, etc.) cannot be used.

1 Speedometer tester measurement procedure Note

- not start suddenly or accelerate/decelerate.
- The maximum speed shall be 40km/h or less.· Driving time shall be within 1 minute.



(1) Drive the rear wheel into the roller.

(2) Make the front wheel free with a free roller.

(3) Secure the vehicle with a lock chain.

(4) Start the engine, take off slowly in the D range, gradually increase the speed, and measure.

(5) After the measurement is completed, gradually decelerate with the brake and stop.

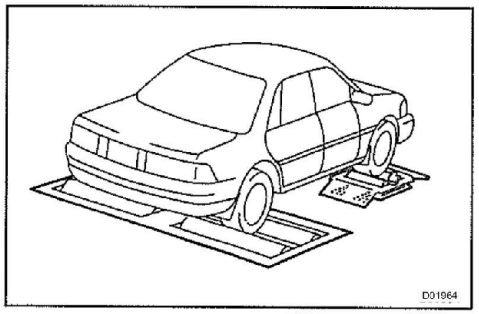
2 Brake tester measurement procedure

CAUTION High-speed brake testers cannot be used. (1)

Drive the wheel (front wheel or rear wheel) to be measured into the roller.

(2) Free the wheel not to be measured with a free roller.

(3) Drive the rollers of the tester and measure.



3 On-the-car balancer (1)

The on-the-car balancer cannot be used.

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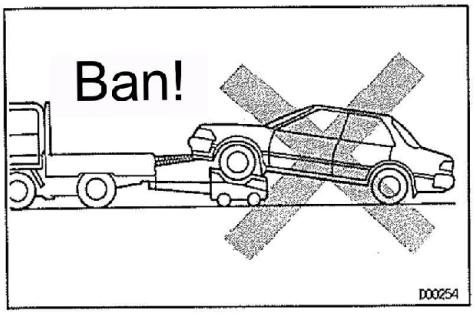

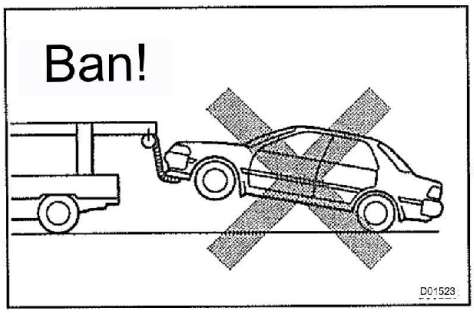

Precautions when towing a full-time 4WD vehicle

(1) Tow with 4 wheels on the ground or with all 4 wheels lifted. In addition, if there is an abnormality in the running system or the drive system, the four wheels must be lifted. carry with

(Note) Towing with only the front or rear wheels lifted is

There is a risk that the trekker will seize or the wheels will jump out of the trekker.

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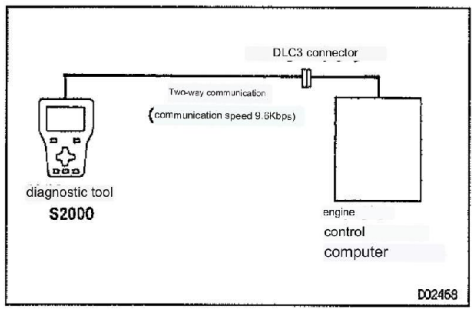

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New diagnosis system

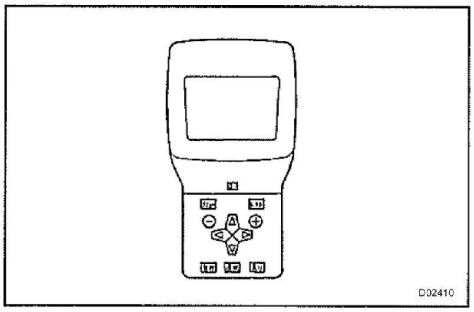
Used in the engine control computer (engine control, ECT control) of the 1G-FE and 1JZ-GE engines.

Overview of the new diagnostic system

The new diagnosis system is a new fault diagnosis system that supports the increasingly sophisticated and complex TCCS engine, ECT, and other in-vehicle electronics systems. system. Fault diagnosis of the new diagnostic system is diagnosed by the in-vehicle computer Just by connecting the S2000 tool, you can proceed while exchanging information in real time, so you can work with higher precision than ever before. became.

In order to obtain the required information, engineers must first diagnose Operate the Tool S2000 and request information from the in-vehicle computer. The computer responds to requests in real time and outputs information for display on the screen of the diagnostic tool S2000.

Since the diagnostic tool S2000 has many functions, it can be used in a wide range of applications, including failure diagnosis and routine inspection work.



Features of the diagnostic tool S2000

The diagnostic tool S2000 that supports this new diagnosis is shown in the table below. It has a function.

basic point	1. Ignition timing check 2. Air-fuel ratio compensator check 3. Fuel pump check 4. Throttle position sensor check 5. Switch signal check 6. Shift position switch check 7. Transmission solenoid check 8. Running test
troubleshoot	1. Check/delete diagnostic code 2. Mode (normal or check) switching 3. Troubleshooting chart Troubleshooting by diagnostic code
ECU data monitor	1. Data monitor ... Check computer data in real time 2. Data recording... ••••••••• It is possible to automatically record in the diagnostic tool by setting arbitrary or triggers. 3. Data replay ····· Call the data recorded in the diagnostic tool 4. Save data.... Save the data recorded in the diagnostic tool to the IC card. 5. Call the data. call to tool
active test	CONT Cinco that can operate the fuel injection amount, ISCV, various VSV, ECT solenoid, etc. regardless of the original operating conditions
*General purpose measurement	1. Digital tester --- Voltage, resistance, pulse measurement 2. Oscilloscope 2-channel storage oscilloscope

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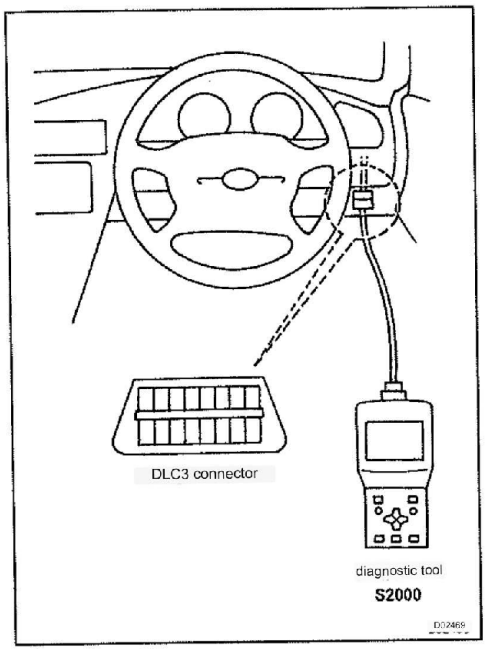
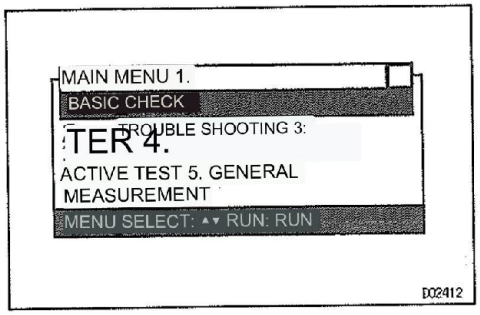


How to use the diagnostic tool S2000

1 Connection with vehicle

Connect to the DLC3 (data link connector No. 3) connector installed near the foot of the driver's seat.



2 Operation of the diagnostic tool S2000

When the power switch of the diagnostic tool S2000 is turned on, the menu screen is displayed, so select the item you want to implement and proceed with the work while interacting with the screen.

Consolidation of diagnostic connectors

With the adoption of the new diagnostic system, the conventional TDCL (installed near the foot of the driver's seat) was abolished, and the diagnostic connector (engine room (installed inside) terminals were integrated and abolished.

Integrated terminal name			
follow 来		DLC 3	Diagnosis connector
TE1	→	TC	←
TE2 VFs OX CCO FP W. TT	⇨	SIL	廃 stop

JE3742

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T0045759

0

Support positions for lifts, jacks and rigid racks

1 Precautions regarding the vehicle state when raising the vehicle

(1) As a general rule, the vehicle should be in a nearly empty state, and should not be jacked up or lifted up with a heavy load. (2) When heavy objects such as the engine, transmission and subframe are removed, the center of gravity of the vehicle shifts. so rose

Either mount the balance weight so that it does not roll, or hold the jack support position with a transmission jack, etc.

2 Precautions when using a 4-post lift

(1) Carry out safe work according to the manual for the lift.

(2) Do not damage tires and wheels with the freewheel beam.

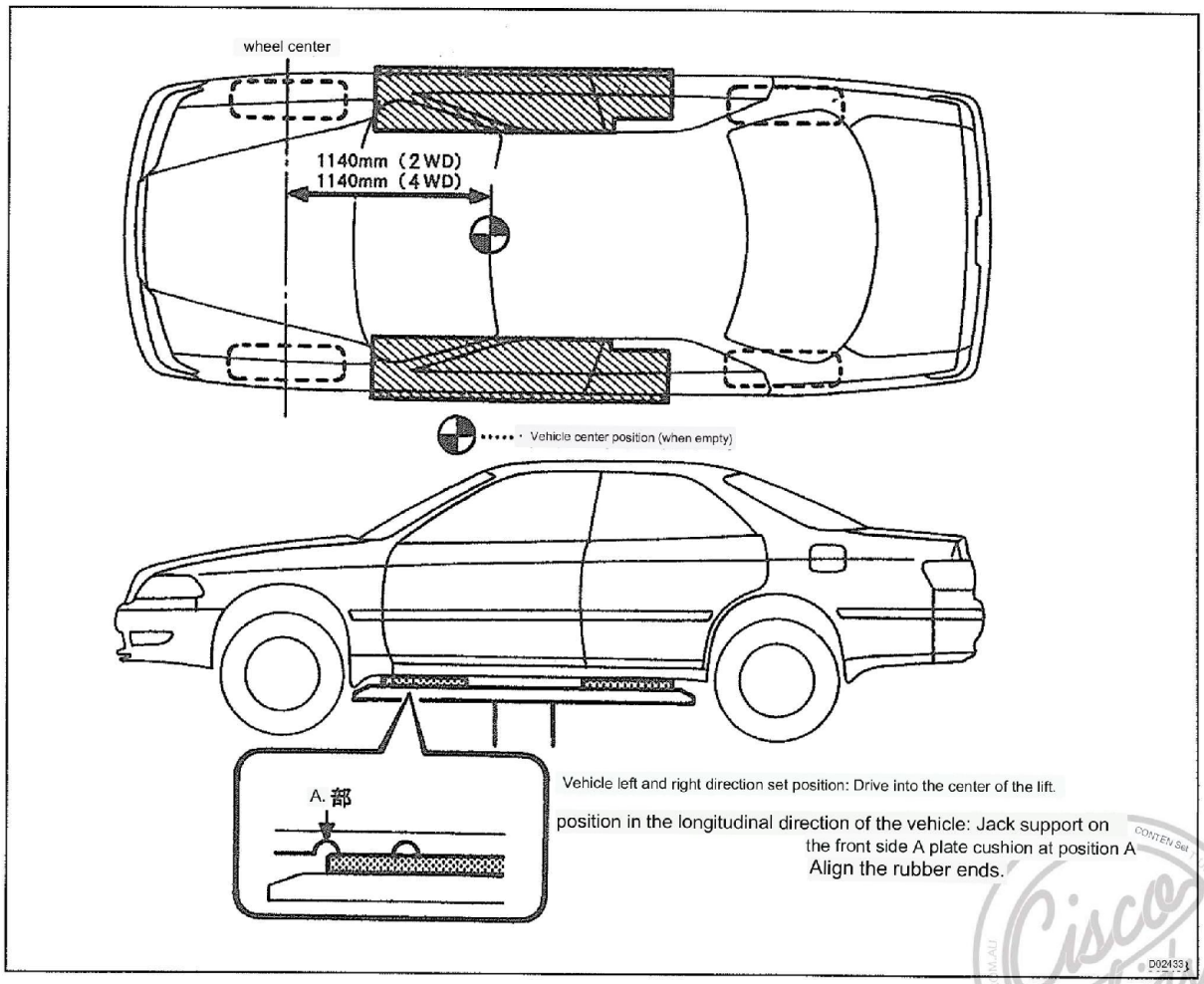
(3) Secure the vehicle using chocks.

3 Precautions when using the plate lift

(1) Carry out safe work according to the lift handling change.

(2) Be sure to drive the vehicle into the designated position.

(3) Lift up until the tires are slightly lifted and shake the vehicle to confirm that the vehicle is stable.



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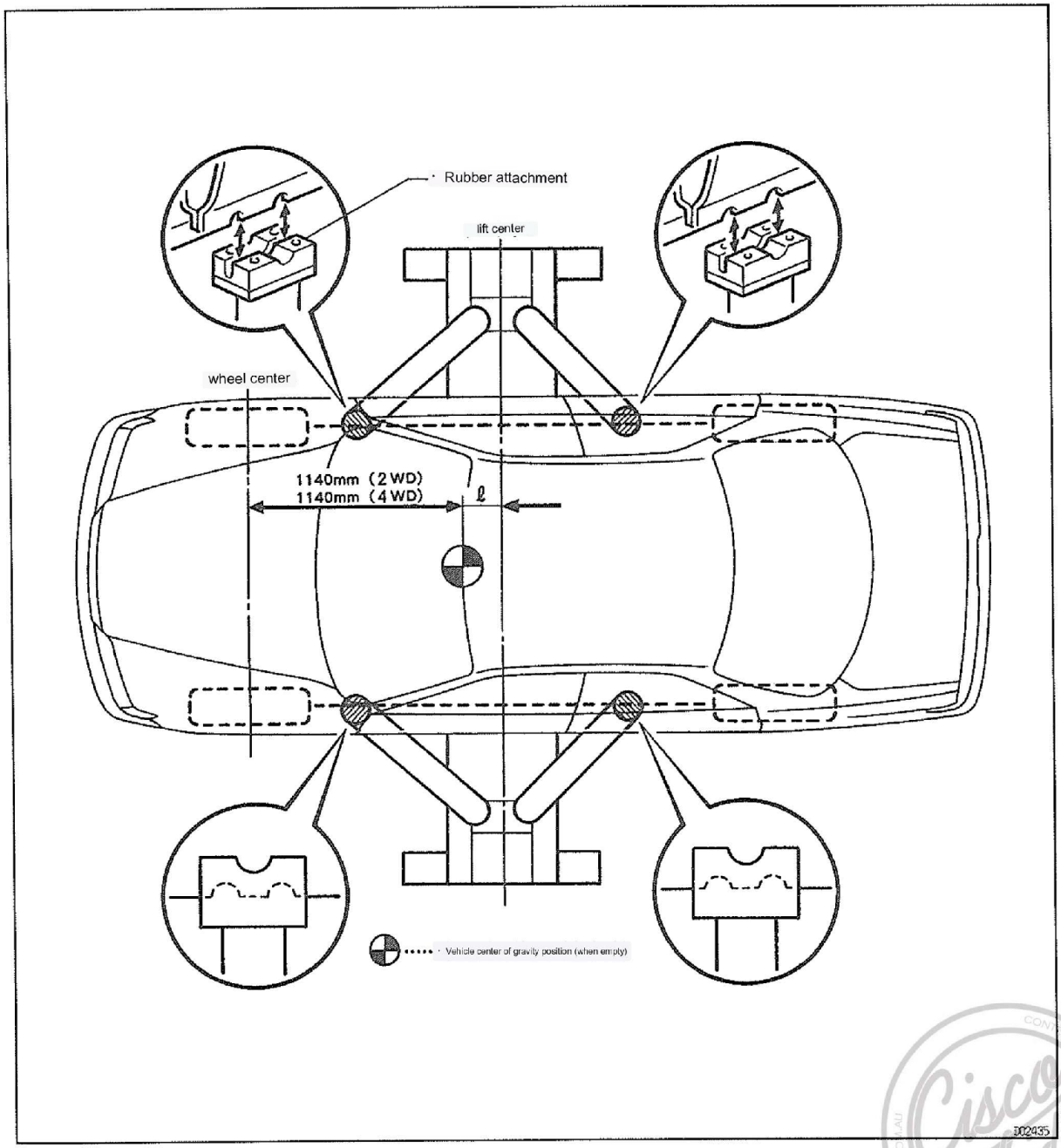
4 Precautions when using the swing arm lift

(1) Perform safe work according to the manual for the lift.
(2) Use a cradle with a rubber attachment as shown in the figure. (3) The vehicle should be driven so that the center of the lift and the center of gravity of the vehicle are as close as possible (l is short).
(4) Adjust the height of the cradle so that the vehicle is horizontal, and align the groove of the cradle with the on-vehicle jack support position. (5) Be sure to lock the swing arm during work.
(6) Lift up the vehicle until the tires are lifted slightly and shake the vehicle to confirm that the vehicle is stable.



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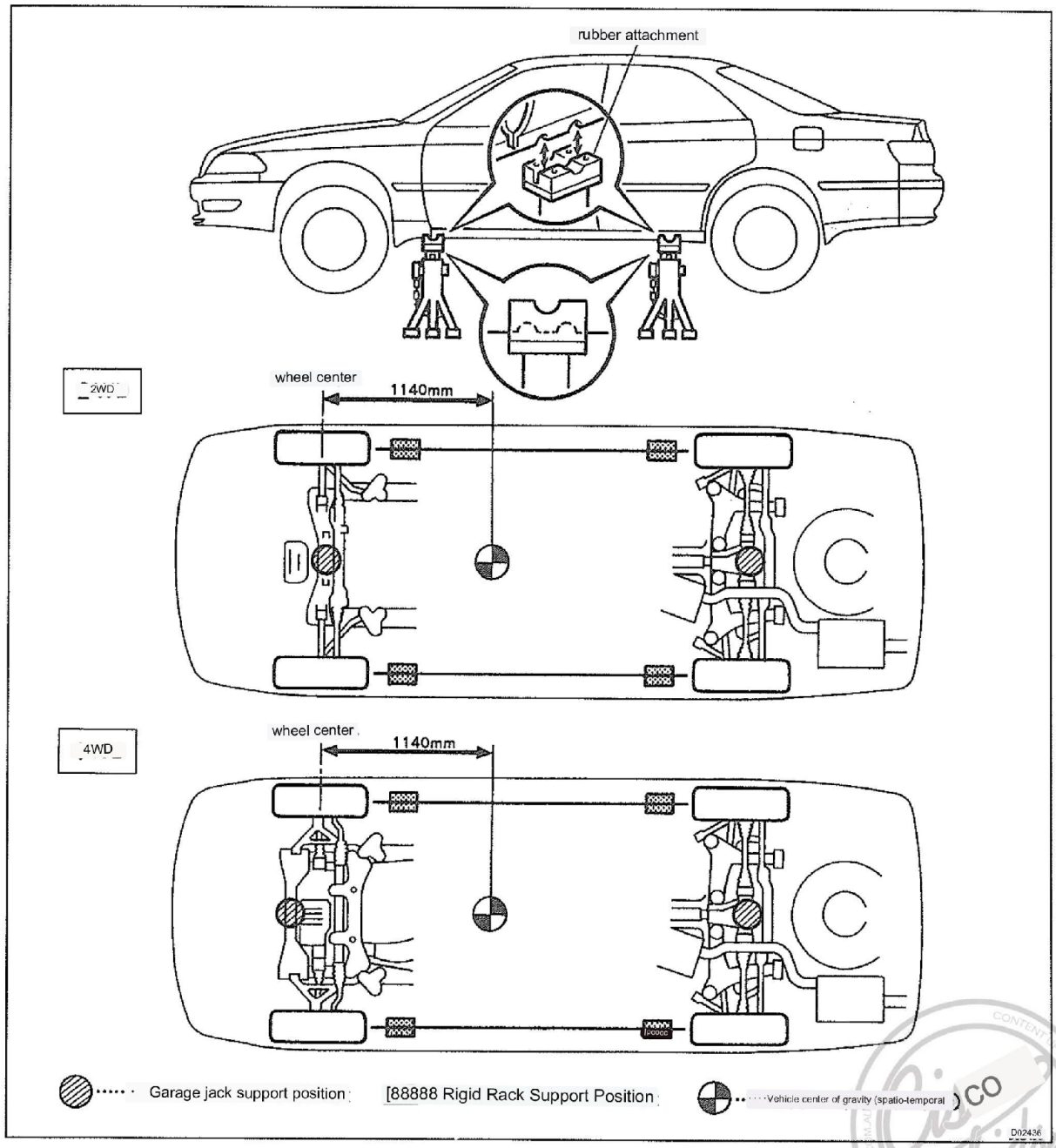
5 Precautions when using jacks and rigid racks

(1) Work on a flat place and always use wheel

(2) Use rigid racks with rubber attachments as shown in the

(3) Jacks and rigid racks shall support the specified positions.

(4) Do not work while only being supported by a jack. When carrying out work, be sure to support it with a rigid rack. (5) Jack up and down carefully and accurately.



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T0049771

Tightening bolts and nuts Tightening

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torque for general standard bolts and nuts

1 How to grasp the tightening torque

(1) The tightening torque of a bolt is obtained by finding the corresponding strength class of the bolt and grasping it from the

〈参考〉 tightening torque table. There are places where 6 and 8T bolts are used as a substitute for strength class 4T, 5T and 7T bolts. In that case, tighten with the proper torque according to the instructions in the text. If the bolt is tightened to the full strength class, the other side may be damaged. (2) Determine the tightening torque of the nut from the mating bolt.

2 Tightening torque table

Strength class \ order		Nominal diameter [mm]	Bitch [mm]	標準締め付けトルク [N•m {kgf•cm}]*1	
				Standard bearing surface (with washer including)	Seat with brim
4T	4	6	1.0	5.0 (56)	6.0 (60)
		8	1.25	12.5 (130)	14.0 (145)
		10	1.25	26.0 (260)	29.0 (290)
		12	1.25	47.0 (480)	53.0 (540)
		14	1.5	74.0 (760)	84.0 (850)
		16	1.5	115.0 (1150)	127.0 (1300)
5T	5	6	1.0	6.5 (65)	7.5 {75}
		8	1.25	15.5 (160)	17.5 (175)
		10	1.25	32.0 (330)	36.0 (360)
		12	1.25	59.0 (600)	65.0 (670)
		14	1.5	91.0 (930)	100.0 {1050}
		16	1.5	140.0 (1400)	157.0 {1600}
6T	6	6	1.0	8.0 (80)	9.0 (90)
		8	1.25	19.0 (195)	21.0 (210)
		10	1.25	39.0 (400)	44.0 (440)
		12	1.25	71.0 (730)	80.0 (810)
		14	1.5	110.0 (1100)	125.0 (1250)
		16	1.5	170.0 (1750)	191.0 (1950)
7T	7	6	1.0	10.5 (110)	12.0 (120)
		8	1.25	25.0 (260)	28.0 (290)
		10	1.25	52.0 (530)	58.0 (590)
		12	1.25	95.0 (970)	105.0 (1050)
		14	1.5	145.0 (1500)	165.0 (1700)
		16	1.5	230.0 (2300)	255.0 (2600)
8T	8	6	1.0	12.0 (125)	14.0 (145)
		8	1.25	29.0 (300)	33.0 (330)
		10	1.25	61.0 (620)	68.0 (690)
		12	1.25	110.0 (1100)	120.0 (1250)
		14	1.5	170.0 (1750)	195.0 (2000)
		16	1.5	260.0 (2700)	299.0 (3050)

*1: Torque when tightening galvanized bolts that are not lubricated.

JA9061

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box round

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When the extension tool is attached to the torque wrench
Tightening torque

1 Tightening torque when using extension tool

(1) When tightening by combining SST or a tool with a torque wrench and extending the entire length, the reading of the torque wrench is specified Tightening
Tightening up to the torque value will cause the actual tightening torque to be excessive.

(2) In the text, in addition to the specified tightening torque, calculate and describe the reading T" when using a typical torque wrench. there is Torque of the same type
If no wrench is available, obtain the torque wrench reading by the formula.

(3) Description example in the text

T=80N·m {816kgf·cm} (Specified tightening torque)
T'=65N·m {663kgf·cm) (Reading when using torque wrench 1300F)

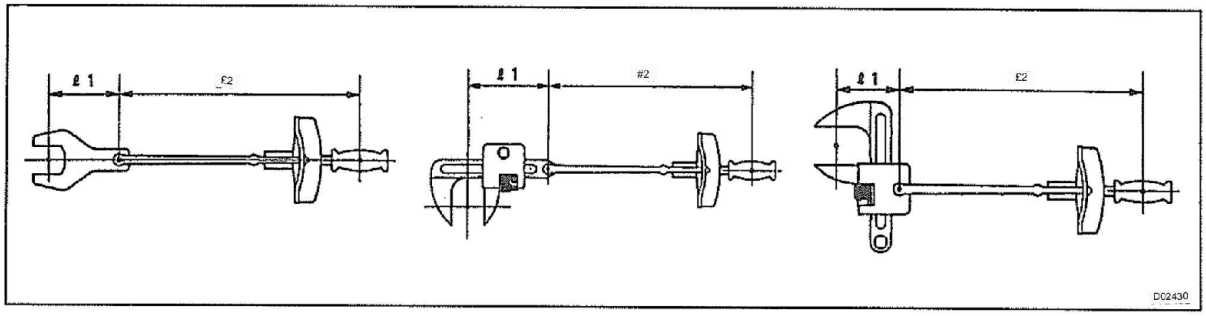
(4) Formula

$$\text{Torque wrench reading} = \frac{\ell 2}{\text{torque}} \times \text{Specified tightening}$$

e1+ £2 [N·m {kgf· cm}] [N·m {kgf· cm}]

ℓ 1 SST or tool length [cm]
ℓ2 Torque wrench length [cm]

JB5605



(5) Specifications of representative torque wrenches

Model	Torque adjustment range [N•m {kgf•cm}]	ℓ 2 [cm]
230F	3-23 (30~230)	25.0
460F	5-45 (50-460)	30.0
920F	10-90 (100-920)	34.5
1300F	20-127 (200-1300)	38.0
1900F	30~190 (300~1900)	42.5

(Use Tohnichi Torque Wrench)

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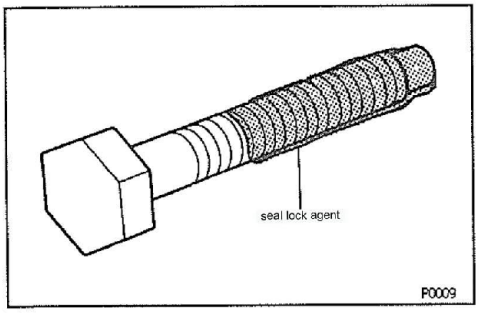


pre-coated bolt

1 What is a pre-coated bolt?

(1) A pre-coated bolt is a bolt whose threads are coated with a seal lock agent.

2 When it is necessary to reapply the seal lock agent

(1) When the precoated bolt is removed.

(2) When the pre-coated bolt moves during tightening inspection,

(In case of loosening or tightening.)

3 How to reuse precoated bolts

(1) Remove old seal lock agent from bolts and screw holes, and degrease with white gasoline.

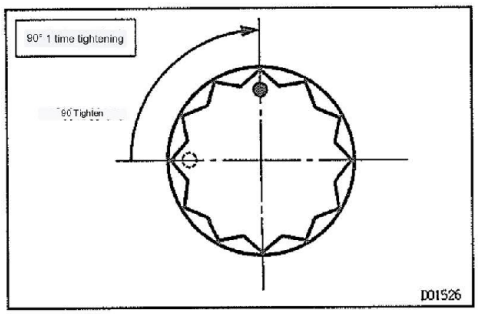
〈参考〉 Clean the screw holes when replacing.

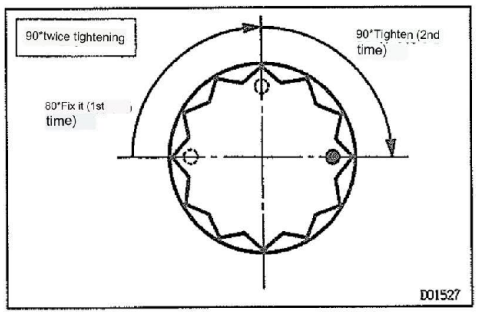
(2) Dry thoroughly by air blowing.

(3) Apply the specified seal lock agent to the bolt threads.

(4) Tighten the bolts to the specified torque.

<Reference> Depending on the applied seal lock agent, it may take a specified time to harden. You may have to let it go. Plastic





area tightening bolt

1 What is a plastic region tightening bolt?

(1) A bolt tightening in the plastic region is tightened in the elastic region of the bolt, whereas the bolt is tightened beyond the elastic region to the plastic region, and the bolt axial force (pulling force in the bolt axial direction) is reduced. stable and up It is a bolt designed to

2 Used part

(1) Engine cylinder head bolts, bearing cap bolts, rear differential ring gear set and flange For wheel set bolts, etc., plastic region tightening bolts are used. may be used.

3 Tightening method

(1) The tightening method is different from general standard bolts. Also, among the plastic region tightening bolts, there are two types of tightening methods depending on the type, so tighten them according to the instructions in the text.

<Reference> The method of tightening the plastic region tightening bolt is to tighten it 90° from the state of being tightened with the specified torque, and then divide it into two times of 90° from the state of being tightened with the specified torque, for a total of 180° tightening. There are two types of cases. The

- Whether or not the plastic area tightening bolt can be reused judgment is depends on the degree of constriction of the bolt.

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MEMO

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1 1G-FE engine

engine adjustment 1-3
Preparation items 1-3
Basic inspection... ..... 1 - Four
Standard value list ..... 1 — 4
V-belt tension/deflection adjustment ..... 1 -Five
[Point 1] 1-5
Valve clearance inspection/adjustment/ ..... 1 -6
[Point 2] ..... 1 — 6
Fuel pressure check ..... 1 -7
"Point 3 ..... 1 — 7
engine control system 1-8
Preparation items ..... 1 — 8
Parts layout diagram ..... 1 — 10
Pressure regulator — ..... 1 — 11
Detachment configuration diagram ..... 1 — 11
injector 1-12
Detachment configuration diagram 1-12
Points to note during attachment/detachment work 1-12
throttle body ..... 1 — 13
Detachment configuration diagram ..... 1 — 13
Points to note during assembly work... ..... 1 — 14
knock sensor ..... 1 — 14
Points to note during attachment/detachment work 1-14
engine control computer 1-15
Detachment configuration diagram ..... 1 - -15
Fuel spill prevention work 1-16
Functional check... 1-16
Air-fuel ratio compensator 1-16
Deceleration control device (fuel cut device) 1-16
Fuel evaporative gas suppression device... 1-17
Catalyst overheat alarm 1-17
system Fuel pump operation check and fuel leak check...1-17
troubleshooting
(diagnosis) 1-18
Diagnosis check... 1-18
Diagnosis code list 1-18
Individual inspection 1-22
fuel pump 1-22
injector 1-22
vacuum sensor 1-23
Throttle body 1-23
Throttle position sensor 1-24
ISCV 1-24
Water temperature sensor and intake temperature sensor 1-25
Igniter 1-25
Distributor 1-25
O2 Sensor (heater) 1-26
exhaust temperature sensor 1-26
canister 1-26
VSV (for canister barge) 1-27
EFI main relay and
Circuit opening relay...1-27
Engine control computer... 1-27
Engine ASSY. 1-35
Preparation items 1-35
Engine ASSY removal and removal 1-36
Tightening torque list/ 1-36
Points to note during attachment/detachment work 1-37
vacuum piping 1-38
piping diagram 1-38
partial engine 1-39
Exploded configuration diagram 1-39
engine body 1-40
Preparation items 1-40
Timing belt 1-42
Detachment configuration diagram 1-42
Points to note during removal work 1-43
Inspection before timing belt installation 1-44
Points to note during installation work... 1-44
crankshaft front oil seal 1-46
Points to note during attachment/detachment work 1-46
Cylinder head gasket 1-47
Detachment configuration ..... diagram 1-47
Cylinder head gasket removal 1-49
Points to note during installation work... 1-51
Engine rear oil seal 1-55
Points to note during attachment/detachment work 1-55
fuel 1-56
Precautions when attaching and detaching the quick connector ..... 1 -56
Preparation items 1-57
fuel filter 1-57
Points to note during attachment/detachment work 1-57
Fuel pump 1-58
Detachment configuration diagram 1-58
Fuel tank 1-59 1-59
Detachment configuration diagram .....
Points to note when installing and removing ..... work 1-61
Lubrication ..... 1 — 62
preparations 1-62
Functional ..... 1 -63
inspection...Oil pressure inspection...1-63 .....
oil filter & union 1-64

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Points to note during attachment/detachment work 1-64
Oil pump... 1-64
Points to note during attachment/detachment work 1-64
Oil pan·· 1-65
Detachment configuration diagram 1-65
Points to note during attachment/detachment work 1-66
cooling 1-67
Preparation items 1-67
Cooling water exchange 1-67
Cooling water drain point 1-67
Functional check 1-68
Cooling system leak check 1-68
water pump 1-68
Detachment configuration diagram 1-68
thermostat 1-69
Detachment configuration diagram 1-69
Individual inspection 1-69
thermostat 1-69
Radiator cap... 1-69
ignition· 1-70
Preparation items 1-70
Functional inspection/ 1-70
Spark check 1-70
Distributor 1-71
Departure from Suzuki domain diagram 1-71
Individual inspection... 1-72
resistive code 1-72
Spark plug 1-72
ignition coil··· 1-72
Distributor 1-72
Starting· 1-73
Preparation items 1-73
starter 1-73
Tightening torque 1-73
Individual inspection..... 1-73
starter relay 1-73
charging 1-74
Preparation items 1-74
Functional check... 1-74
alternator 1-74
Tightening torque 1-74

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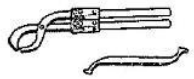
T00049671

engine adjustment

Preparation items

1

SST

	09248-55040	Valve clearance adjustment tool set	
	(09248-05410)	valve lifter press	For valve clearance adjustment
	(09248-05420)	valve lifter stopper	For valve clearance adjustment

instrument

	09082-00012	toyota electrical tester	For inspection of each part
	09843-18010	tacho pulse pickup wire	For tachometer connection
	09843-18020	Diagnosis check wire	Diagnosis connector for short circuit
	95506-00090	belt tension gauge (Nippondenso product number) Treated as Nippondenso stock	For V-belt tension measurement
	TBGCG-100 TIGCG-100	Gasoline compression gauge set Handled by Banzai Co., Ltd. Handled by Iyasaka Co., Ltd.	For compression pressure measurement
COHC meter 22201			For measuring COHC concentration
Straightedge, push-pull gauge 22102			For strict measurement of V-belt deflection
Micrometer 20302			For valve clearance adjustment

Oils and fats/others

spark plug cleaner 54101	For spark plug cleaning
Seal packing black 50902	For application when installing cylinder head cover

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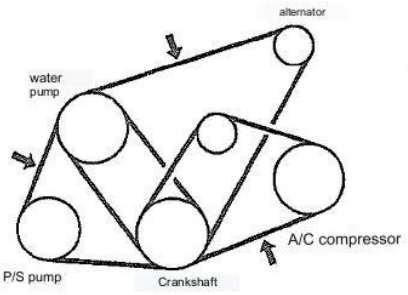
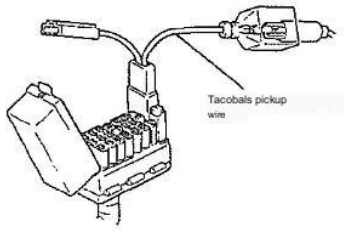
T0049072

Basic inspection

standard value list

1

<table>
<tr><th>Inspection items</th><th colspan="3">Standards</th><th>Main points</th></tr>
<tr><td>battery specific gravity</td><td colspan="3">1.25~1.29 (liquid temperature 20℃)</td><td>————</td></tr>
<tr><td rowspan="3">Spark plug</td><td>Model (manufacturer)</td><td colspan="2">Gap reference value [mm]</td><td rowspan="3">————</td></tr>
<tr><td>K16R-U11 (ND)</td><td colspan="2">1.0~1.1</td></tr>
<tr><td>BKR5EYA11 (NGK)</td><td colspan="2">1.0~1.1</td></tr>
<tr><td rowspan="8">V belt tension/deflection amount</td><td colspan="3">Deflection amount reference value [Pushing force 98N (10kgf)]</td><td rowspan="8">Tension/deflection measurement points
 

R3056
- When replacing the belt with a new one, adjust it to the median value of the standard value when the new belt was installed.
When inspecting a belt that has been used for more than 5 minutes, check the standard value at the time of inspection.
- When reassembling a belt that has been used for more than 5 minutes, adjust it to the median value of the standard value at the time of inspection.
Adjustment: Instructions 1</td></tr>
<tr><td>Standard value / kinds</td><td>At the time of new installation [mm]</td><td>Test time [mm]</td></tr>
<tr><td>for alternator</td><td>11~13</td><td>14~18</td></tr>
<tr><td>For P/S pump</td><td>5.5~7</td><td>7~9</td></tr>
<tr><td>For A/C compressor</td><td>7~8.5</td><td>9~11</td></tr>
<tr><td colspan="3">Tension reference value</td></tr>
<tr><td>Reference value / Collection</td><td>During inspection when installing a new product [N</td><td>{kgf}] [N {kgf}]</td></tr>
<tr><td>for alternator</td><td>540~635 {55~65}</td><td>245~390 (25~40)</td></tr>
<tr><td>For P/S pump</td><td>440~540 (45~55)</td><td>195~345 {20~35}</td></tr>
<tr><td>For A/C compressor</td><td>540~635 (55~65)</td><td>295~390 (30~40)</td></tr>
<tr><td rowspan="2">Idle speed</td><td>M/T car</td><td colspan="2">650~750r/min</td><td rowspan="2"> 

R8289
・ Primary signal detection type tachometer is DIAGNO
Tachopulse pickup on sys connector
Attach the wires and install the tachometer.</td></tr>
<tr><td>A/T car</td><td colspan="2">600~700r/min (N range)</td></tr>
</table>

JR3102

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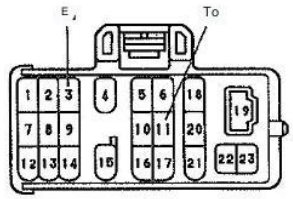
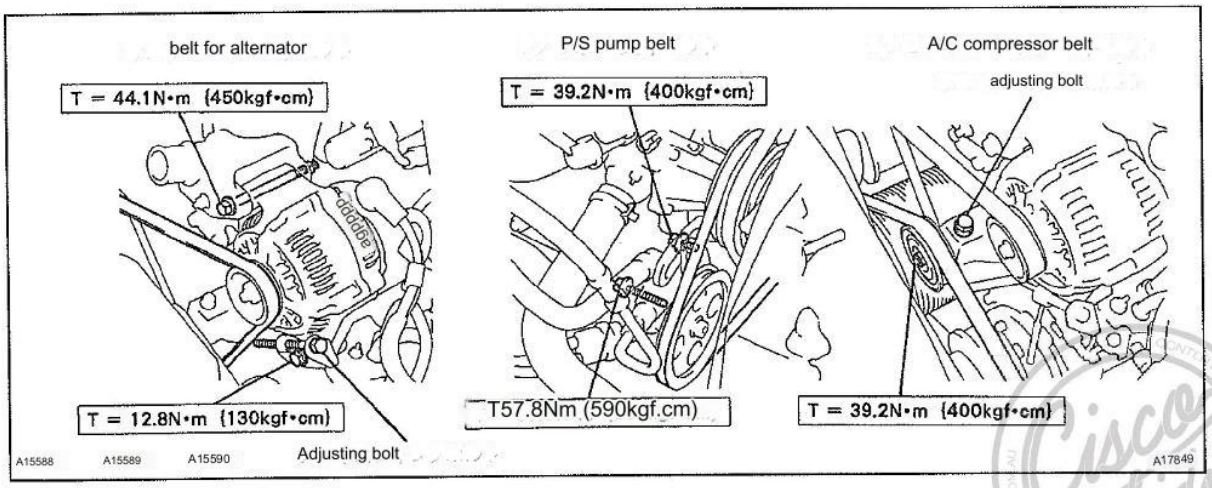
Inspection items	Reference value		Main points
Ignition timing	To E (short circuit)	BTDC 10±2°	Diagnosis connector terminal position  Ici-23-1 (Reference) You can also check using the diagnostic tool S2000.
	TcE (release)	BTDC 7~24°	
Intake manifold negative pressure	57.3kPa (430mmHg) or more		· During idle rotation
compression	Standards	1.27MPa (13.0kgf/cm²)	· Remove all spark plugs and reduce engine speed to 250r/min or more
	limit	0.98MPa (10.0kgf/cm²)	
	Cylinder difference limit	100KPa {1.0kgf/cm²}	
CO.HC concentration	CO wetness	1.0% or less	· After holding the engine speed at 2500 r/min for 2 minutes, at idle speed
	HC concentration	800ppm or less	
Valve clearance	IN	0.15~0.25mm (when cold)	· Inspect and adjust the valve clearance when the valve is cold. Summary: 2
	EX	0.25~0.35mm (when cold)	
fuel pressure	Regulator open to atmosphere	269~308kPa {2.75~2.87kgf/cm²}	· During idle rotation Summary: 3
	regulator hose connection	Approximately 230kPa {2.35kgf/cm²}	

JB3203

Y0049572

V-belt tension/deflection adjustment

Tips 1



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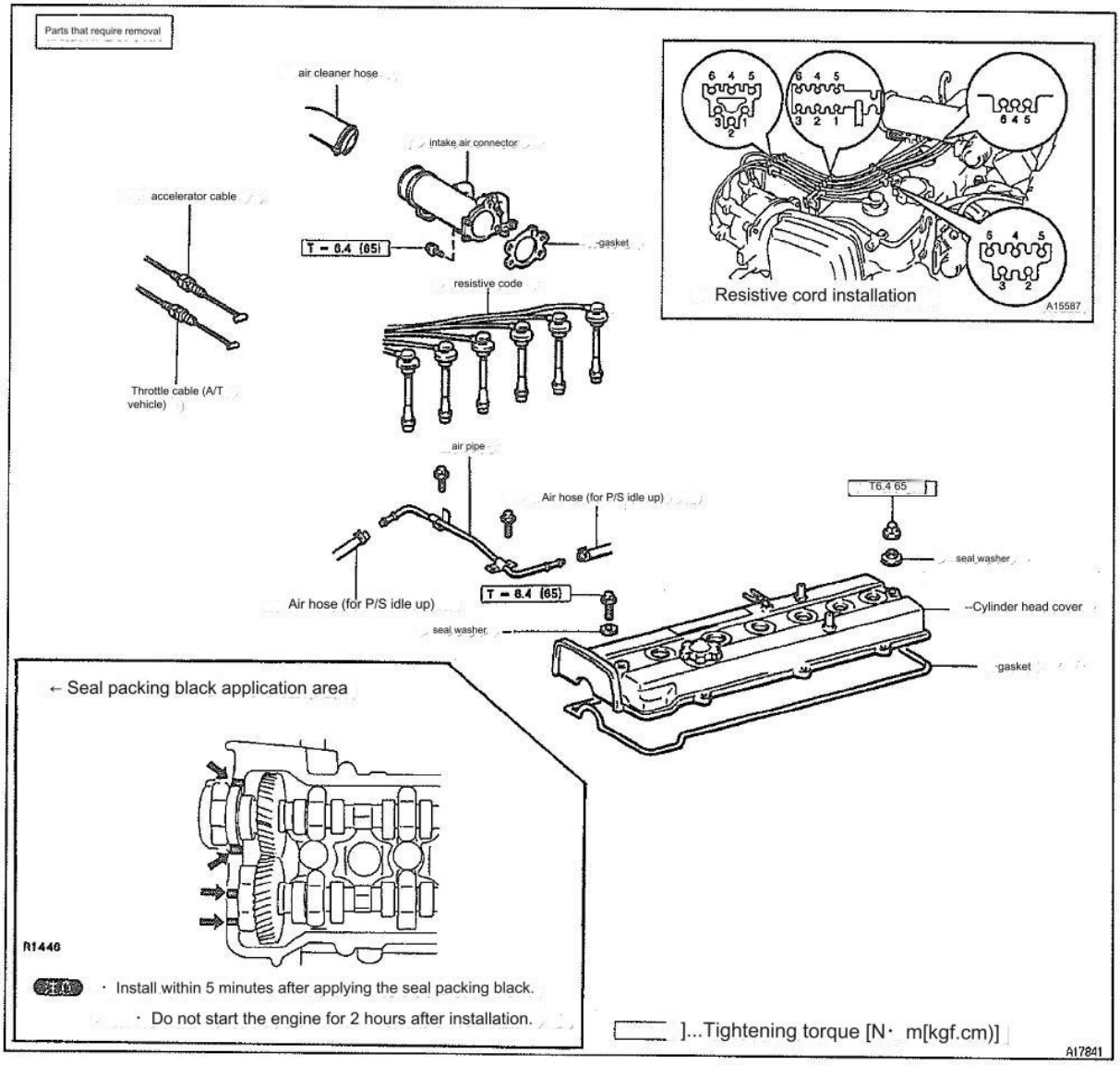
Valve clearance inspection/adjustment

T00028574

1

Tip 2

1 Valve clearance check



Measurement site

No1 cylinder compression top dead center → Rotate the crankshaft pulley 360° forward → No. 6 Cylinder compression top dead center

IN side	○		○		○	
Cylinder No.	1	2	3	4	5	6
EX side	○	○		○		

IN side		○		○		○
Cylinder No.	1	2	3	4	5	6
EX side			○		○	○

JB3205

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2 Valve clearance adjustment

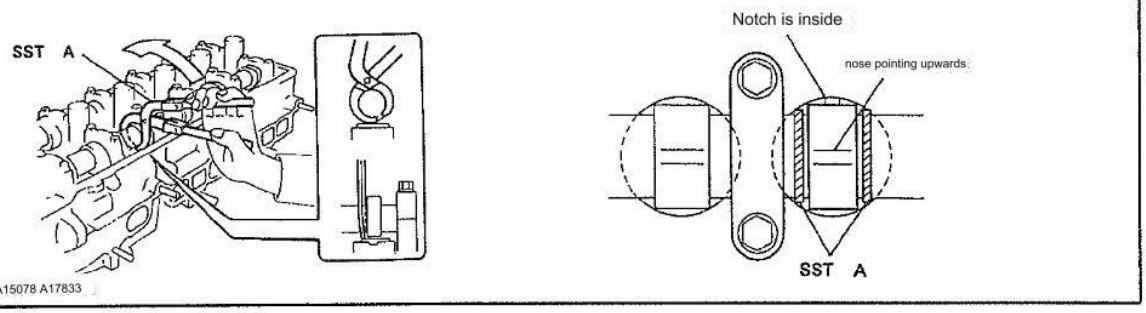
・ Select the shim and use SST to replace it as follows.

S S T A 09248-05410

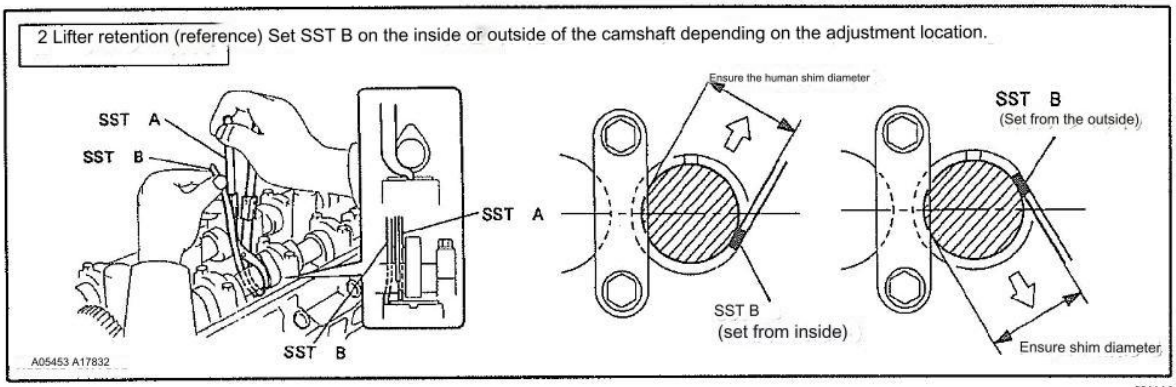
S S T B 09248-05420

1

1 Push down the lifter <Reference> Set SST A to the bearing cap side or the opposite side depending on the adjustment location.



2 Lifter retention (reference) Set SST B on the inside or outside of the camshaft depending on the adjustment location.



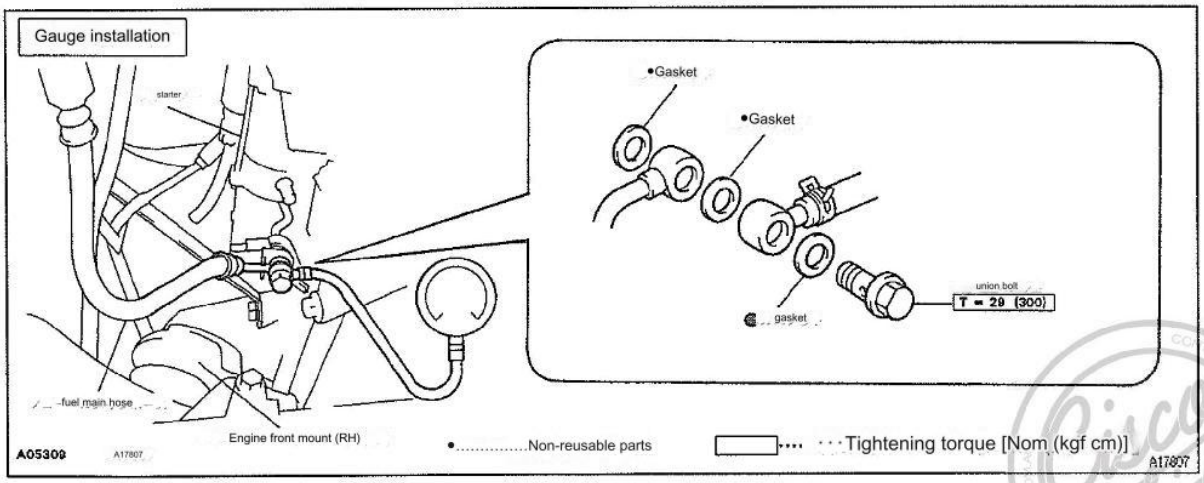
JB3206

T0048630

Fuel pressure check

Tip 3

Gauge installation



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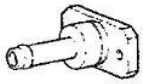
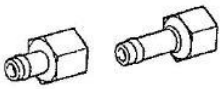
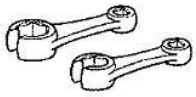
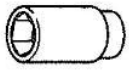
T0049777

Engine control system

1

Preparation items

S S T

	09240-00020 Wire gauge set	
	(09242-00020) Wire gauge (0.2mm)	For air gap inspection
	(09242-00060) Wire gauge (0.6mm)	For air gap inspection
	09268-41046 Injection measuring tool set	
	(09268-41091) Union №7	For injector inspection
	(09268-52011) Injection measuring ring attachment	For injector inspection
	(90467-13001) Clip	For single injector school
	(95336-08070) Hose	For injector inspection
	09631-22020 Power Steering Hose Nut Wrench Set	Fuel tube & hose removal
	09816-30010 oil pressure switch socket	Knock sensor removal/removal

instrument

	09082-00012 Toyota Electrical Tester for checking	each part
	(09083-00060) Mini test lead	Engine control computer inspection

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	09842-30070	EFI inspection wired	"For injector inspection"
	09843-18020	Diagnosis check wire	Diagnosis connector for short circuit
	TB-501 HVP-1	mighty back Treated as Banzai Co., Ltd. Treated as Iyasaka Co., Ltd.	For inspection of each part
	TB-707 EFI-4T	EFI fuel pressure gauge Treated like a banzai Treated as Iyasaka Co., Ltd.	For fuel pressure check
S2000 set 09991-60100		57302	Diagnosis, computer data, for checking fuel pumps and air-fuel ratio compensators
S2000 program card 09991-60200		57303	Diagnosis, computer data, for checking fuel pumps and air-fuel ratio compensators
signal check terminal 09085-00300		23105	For inspection of each part
sound scope		20801	For checking injector operating sound
Graduated cylinder		21801	For checking injector injection amount
Stopwatch		20801	For checking injector injection amount
oscilloscope		20501	Engine control computer inspection
thermometer		21701	For checking water temperature sensor and intake temperature sensor

Oils and fats/others

gasoline	32204	For injector and pressure regulator ring application
saucer	53001	"For injector inspection"
Toyota genuine long life coolant	32001	For cooling water replenishment
yellow paint	51103	For sealing the throttle position sensor For sealing throttle stop screw
Vinyl tube	52005	For injector inspection

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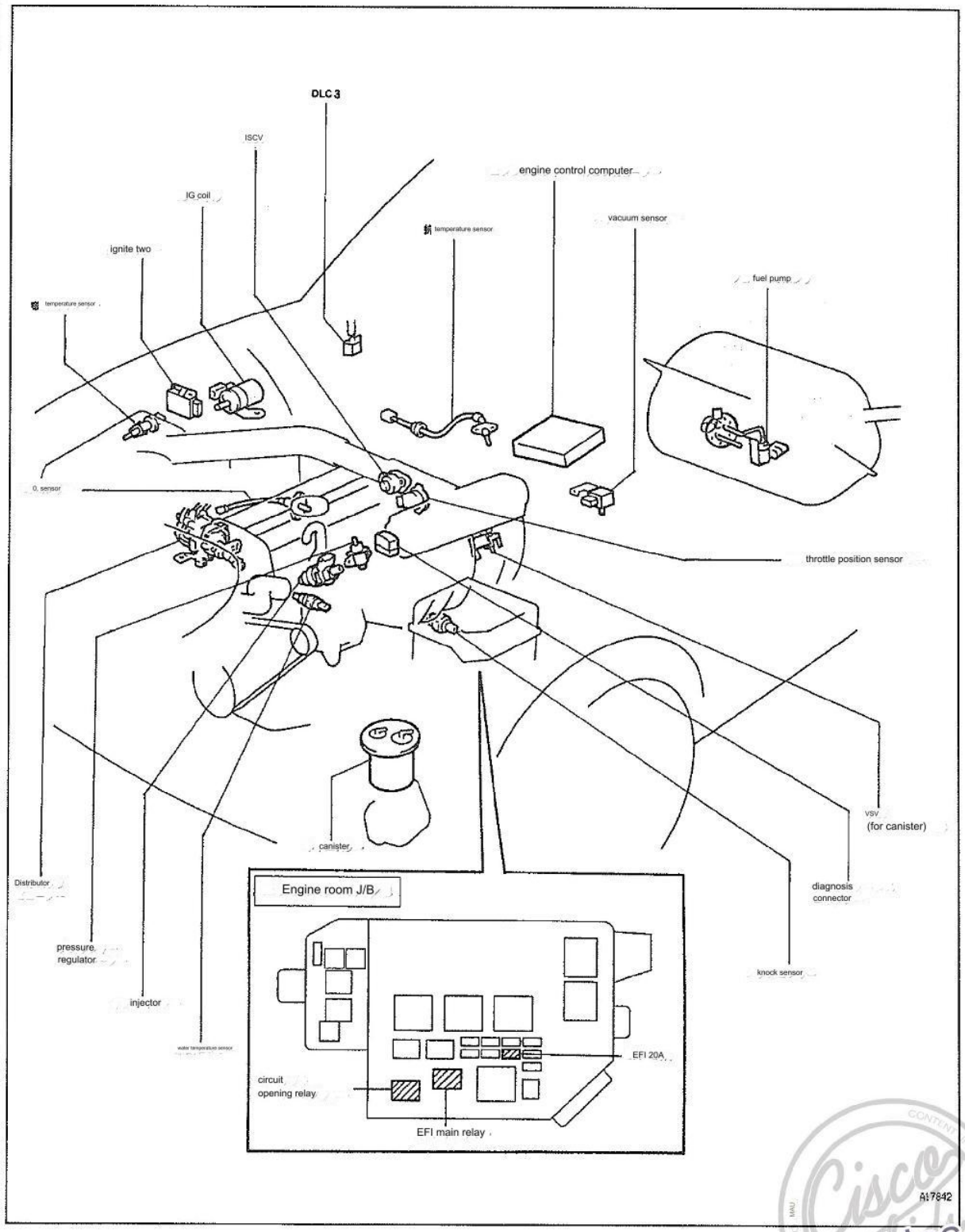
T0049778

Parts layout diagram



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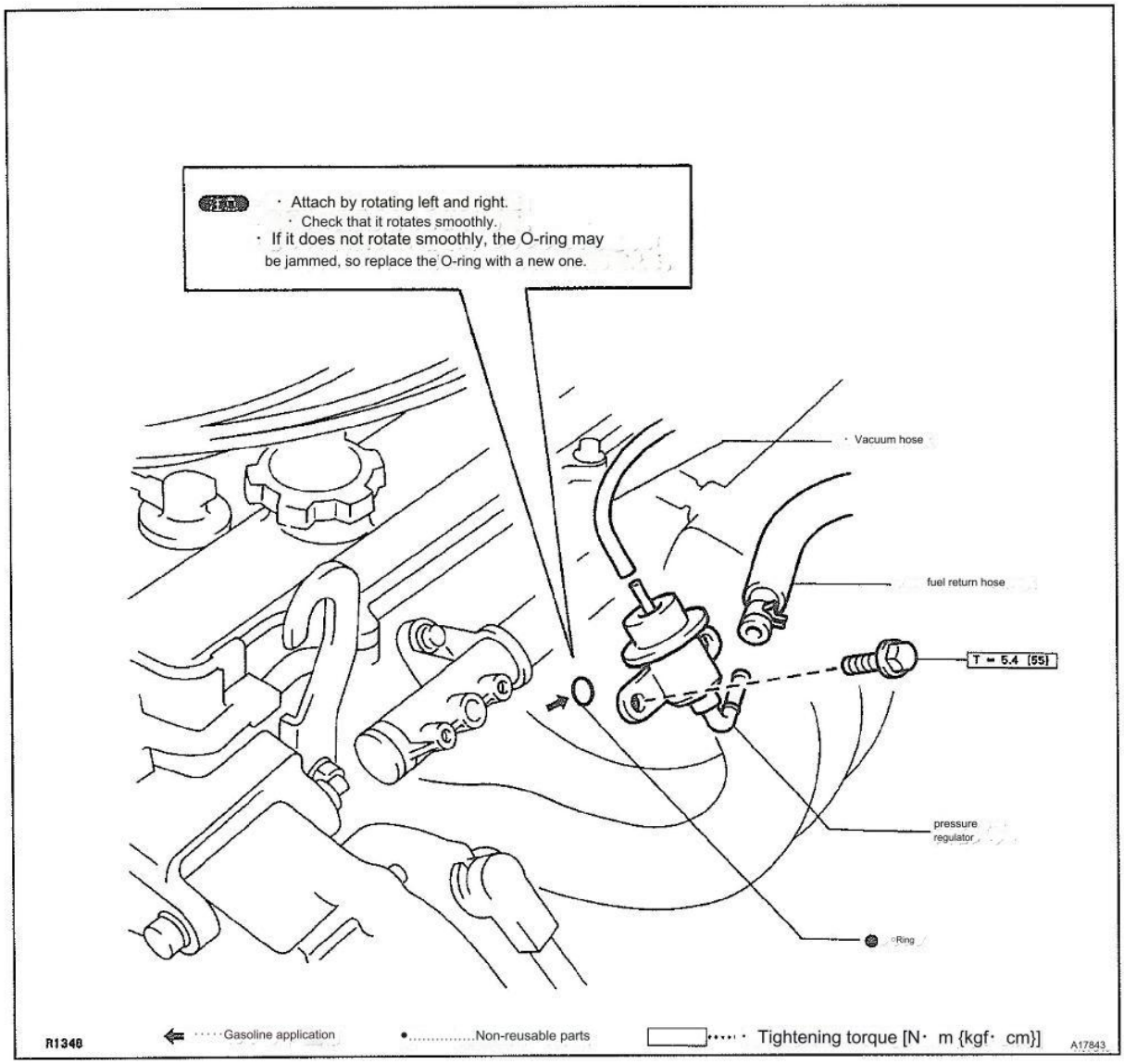
pressure regulator

Detachment configuration diagram



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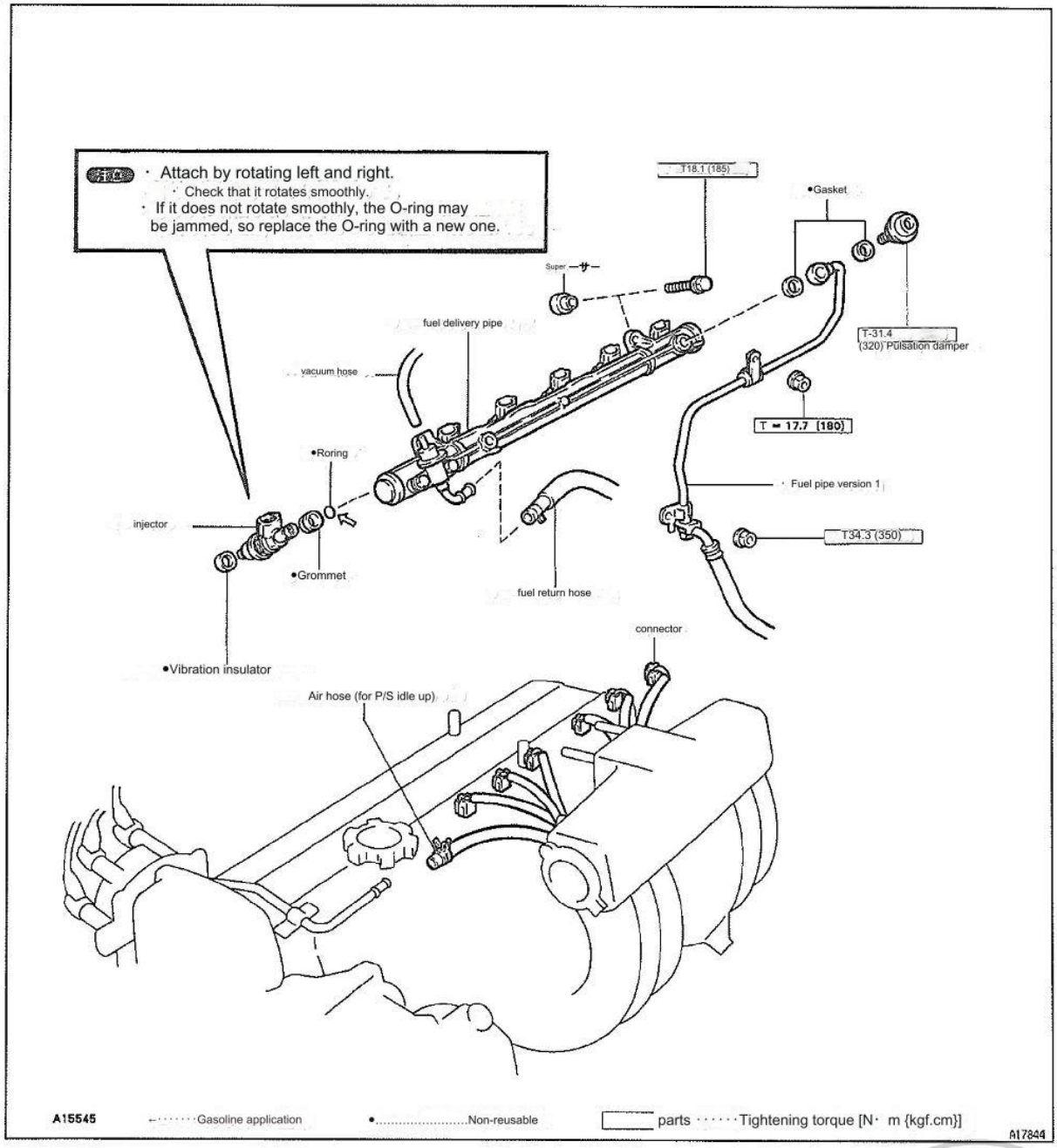
injector

Detachment configuration diagram

1



Points to note during attachment/detachment work

1 Throttle body removal/
removal (see "EFI system" - "Throttle body")

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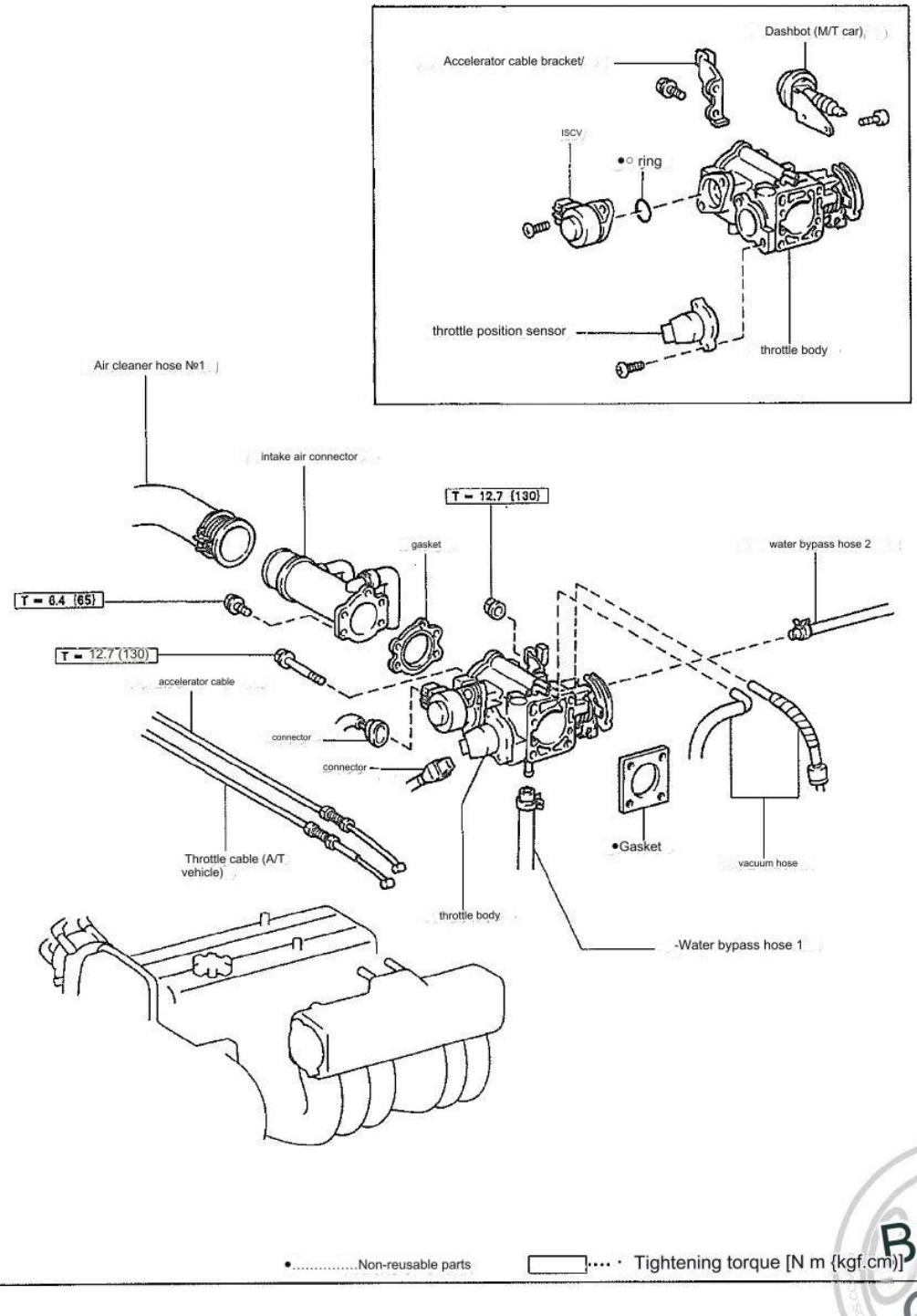
T0040701

throttle body

Detachment and disassembly configuration diagram

1



•.....Non-reusable parts ▭.... · Tightening torque [N m {kgf.cm}]

A12345

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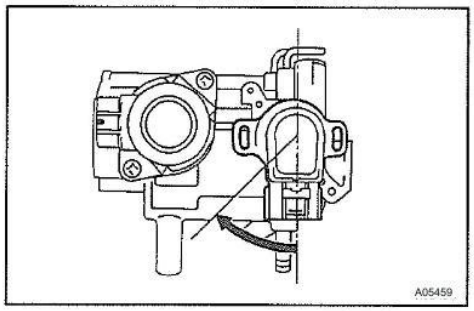

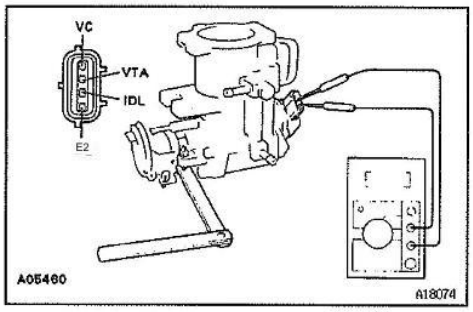

Points to note during assembly work

1 Installing the throttle position sensor

(1) Check that the throttle valve is fully closed.

(2) Rotate the sensor approximately 45 degrees to the left from the fully closed valve position and insert it into the throttle body.

(3) Turn the sensor clockwise and temporarily tighten the two screws.

2 Throttle position sensor adjustment

(1) Insert a 0.5mm thickness gauge between the throttle stop screw and throttle lever.

(2) Check that there is continuity between IDLE2 terminals.

<Reference> If there is no continuity between the IDLE2 terminals, rotate the sensor counterclockwise until there is continuity.

(3) Slowly rotate the throttle position sensor to the right, and fully tighten the sensor at the moment when there is no continuity between the IDLE (2 terminals).

(4) Check the throttle position sensor.

Reference	value 0.5mm	Continuity
	1.0mm	No continuity

If it is outside the standard value, readjust according to steps (1) to (3).

(5) Apply yellow paint to the mounting screws to seal them.

T9048752

knock sensor

Points to note during attachment/detachment work

1 Knock sensor removal and removal

(1) Attach and remove the knock sensor using SST.

SST 09816-30010

T-45.0N.m {450kgf.cm}

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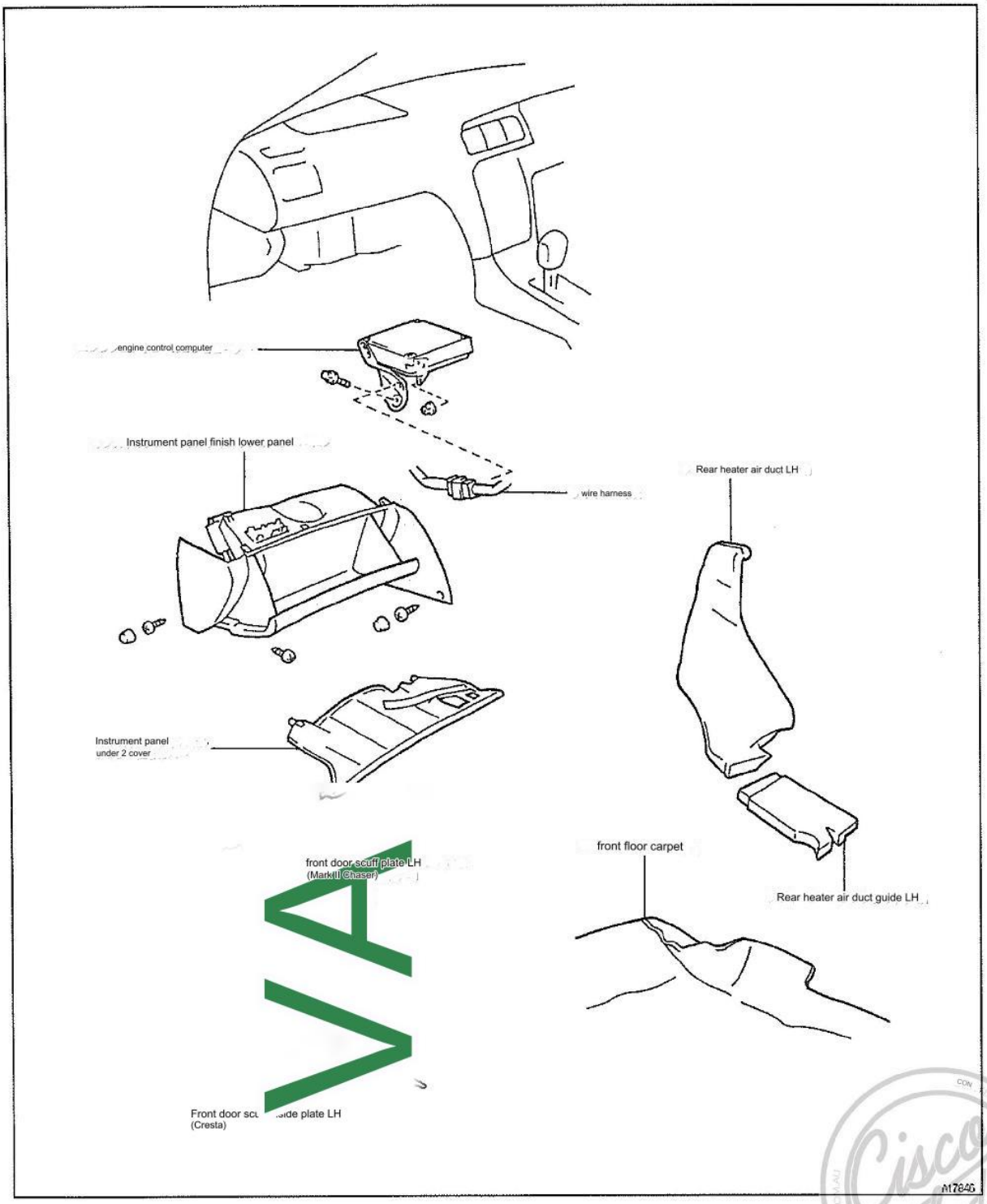
TC049783

engine control computer

Detachment configuration diagram



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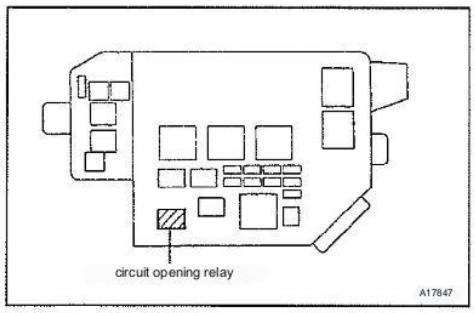


T0049532

Fuel spill prevention work

· Before removing fuel parts, be sure to perform fuel spill prevention work.

·Even after fuel spill prevention work, some residual pressure remains in the fuel pipeline, so when removing the fuel pipeline, cover it with a cloth to prevent fuel from scattering.

1 Circuit opening relay removal

2 Engine start

(1) Start the engine, let it stop naturally, then turn the ignition switch to OFF.

3 Remove battery terminal

4 Circuit opening relay installation

T0049533

Functional inspection

Air-fuel ratio compensator

1 Functional

inspection <Reference> Inspection can also be performed using the diagnostic tool S2000.

(1) Connect the mini test lead to the Toyota Electrical Tester and set the rotary switch to the 20V range.

(2) Connect the test lead to the tester's ⊕ test lead and E1 terminal to the OX terminal of the engine control computer.

Leave the computer connector connected to the computer and connect the test leads from the back of the connector.

(3) Keep the engine running at 2500r/min for about 2 minutes and check the O2 sensor. Warm up.

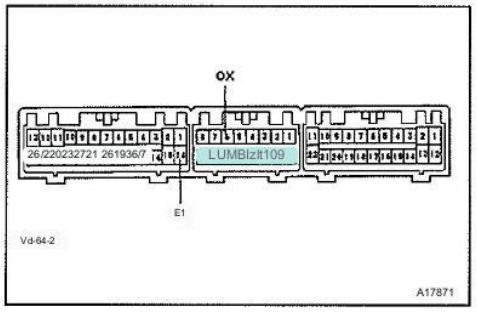
(4) Maintain the engine speed at 2500r/min and check that the Toyota Electrical Tester's indication changes between 0 and 1V. (Fee

(confirmation of backlog)

Criteria Changes more than 8 times in 10 seconds

· 0, The sensor will get cold, so please continue with step (3).

· If the tester's instructions do not change, repeat step (3) to confirm (I approve.



Deceleration control device (fuel cut device)

1 Functional check

(1) Increase engine speed to 2500r/min or higher.

(2) Check the injector operating sound using a sound scope do.

(3) When you release the throttle lever, you will hear the injector operating sound.

Confirm that it stops momentarily and that the operating sound is heard again.

<Reference> Fuel cut start and return rotation speeds vary depending on various vehicle conditions.

It changes depending on the situation.

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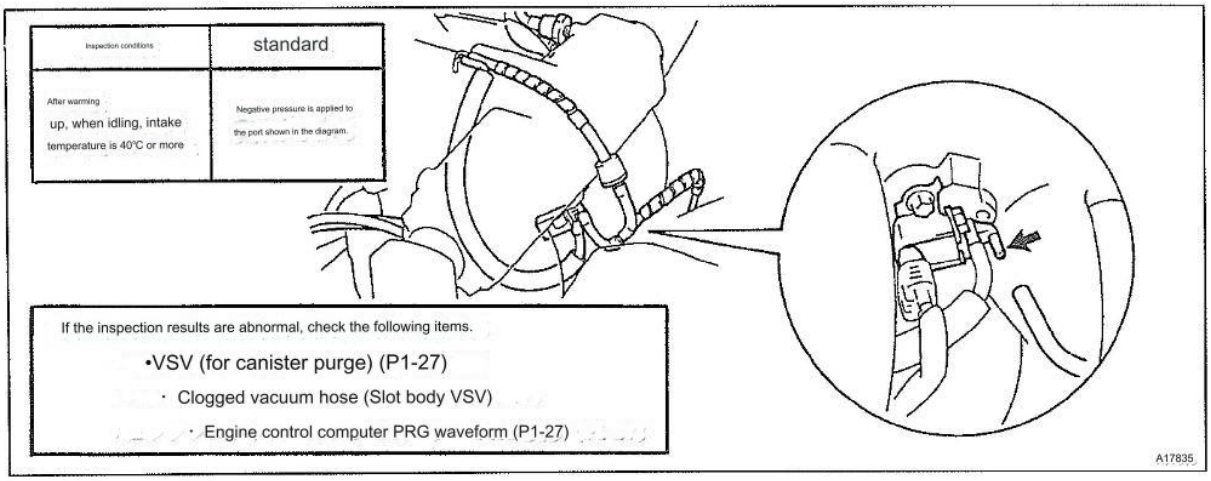
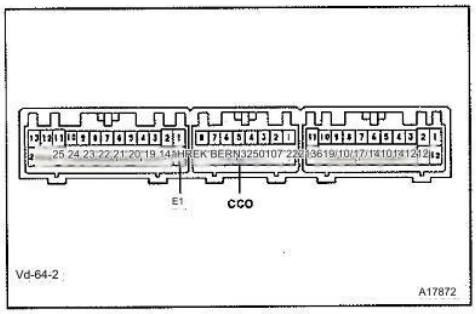
Fuel evaporative emission suppression device

1 Functional check





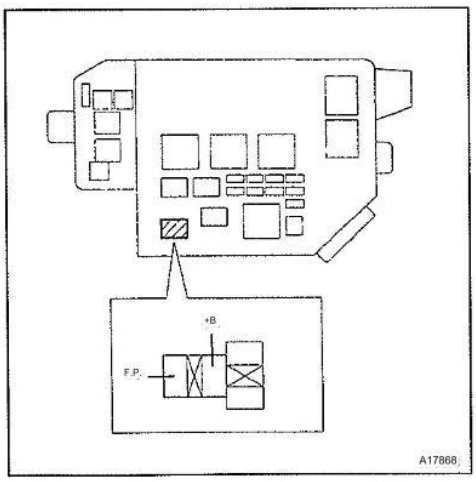
Catalyst overheating alarm device

1 Functional check

(1) イグニ - Check that the exhaust temperature lamp lights up when the cushion switch is turned on.

(2) When starting the engine, check that the exhaust temperature lamp goes out.

(3) When the engine is running and the CCO E1 terminals of the engine control computer are shorted, confirm that the exhaust temperature lamp lights up.



Fuel pump operation check and fuel leak check

CAUTION: Be sure to check for fuel leaks after removing and installing the fuel system.

(Reference) You can also check using the diagnostic tool S2000.

1 Installing the battery terminal

2 Circuit opening relay removal

3 Short circuit between FP+B terminals

4 IG switch ON

5 Check fuel pump operation

6 Check for fuel leaks

7 IG switch OFF

8 Circuit opening relay installation

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T0049867

troubleshooting

(diagnosis)

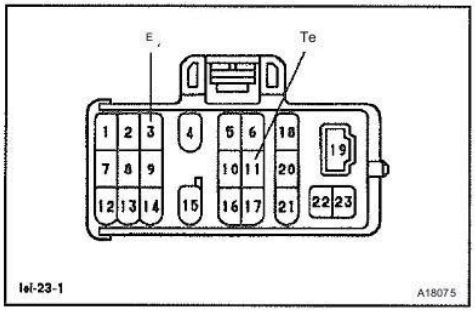
1

This troubleshooting mainly describes items caused by the EFI device. Therefore, matters related to the engine itself are not included.

Diagnosis check

(Reference) - When using the diagnostic tool S2000, not only normal mode but also Check mode can be selected. Check mode is normal This mode has improved anomaly detection sensitivity compared to the real mode. (Da (Refer to the diagnosis contents in the Iagnosis Code List) - Inspection in check mode is performed when a normal code is output in normal mode even though there may be an abnormality in the signal system of each sensor.

Normal mode inspection with check engine light



1 Prior confirmation

(1) Check engine warning lamp lights up

(2) Throttle valve fully closed (IDL contact ON)

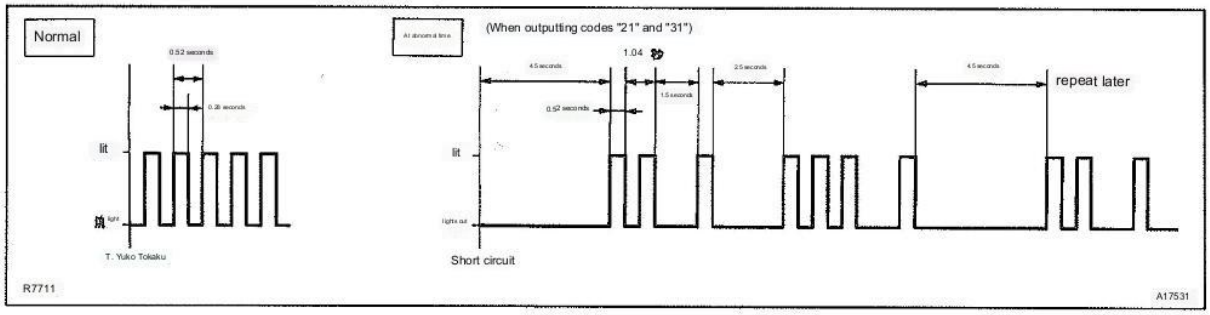
(3) Shift lever position N or P range (NSW ON)

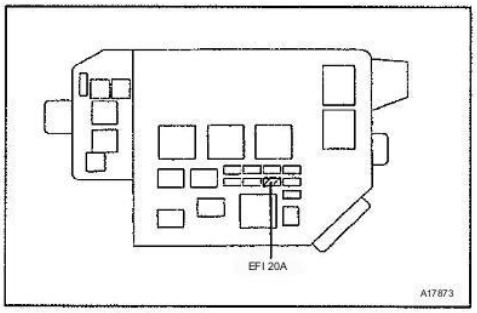
(4) A/C switch OFF

2 TcE, short circuit between terminals

3 Diagnosis code reading

(1) Turn on the IG switch and read the number of times the lamp blinks. <Reference> If two or more code numbers are output, display them in ascending order.





4 Diagnosis code memory deletion

(1) Remove the EFI fuse (20A) for at least 10 seconds, then connect it.

Diagnosis code list

· The diagnostic code “SAE” is the output when using the diagnostic tool S2000. The "lamp" is the check engine warning light. Shows the output code when using . (SAE: American Automotive Engineering (Society)

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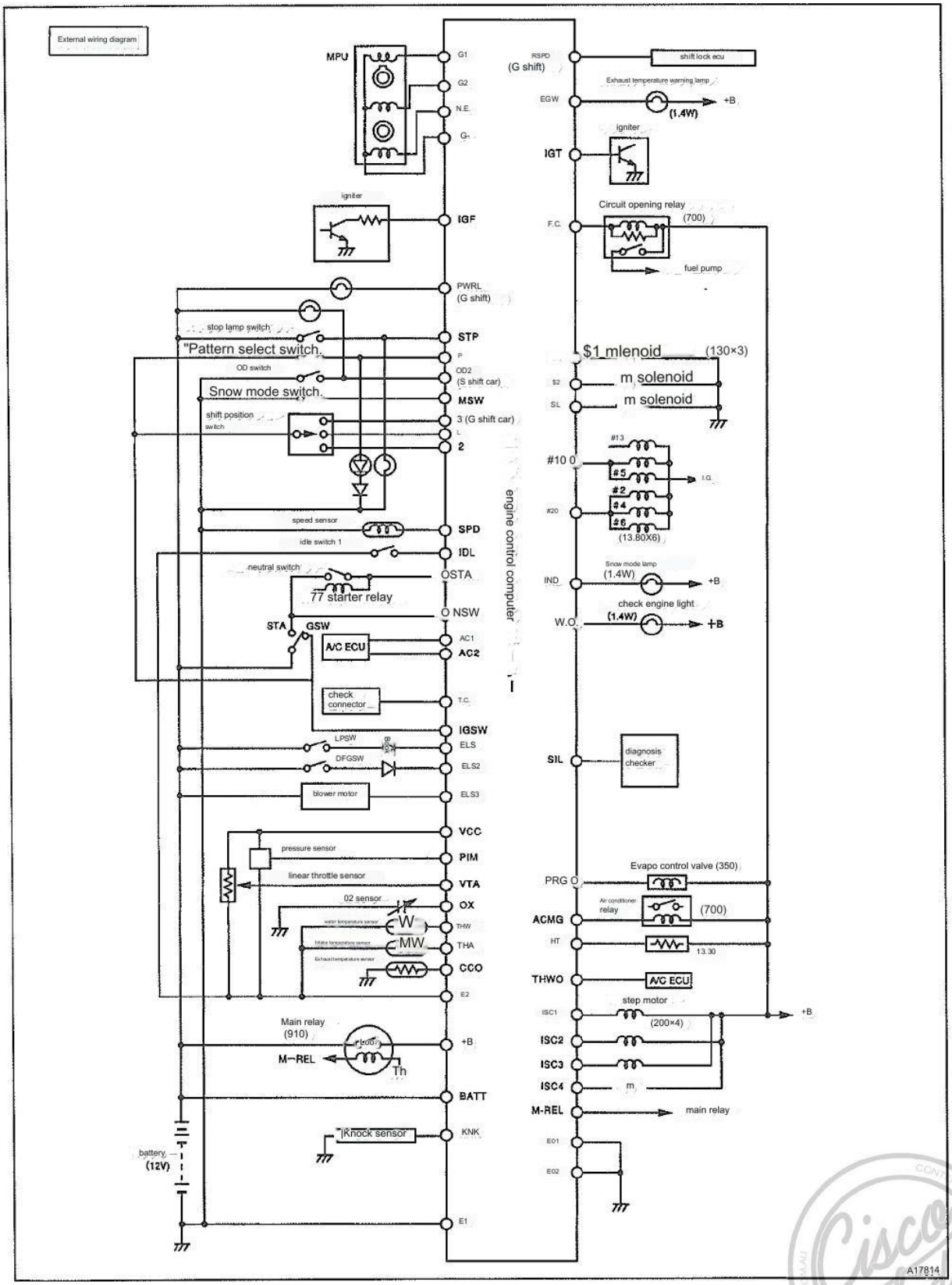

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code number SAE	lamp	Diagnosis item (terminal symbol)	Diagnosis details ① Diagnosis conditions ② Abnormal condition abnormal period ③ ④ Others) Normal mode	check mode	Lamp lit	memory	Main malfunction phenomena	Inspection area
P0335	12	Rotation signal system 1 (G1, G2, NE)	①During cranking ②G and NE signals are not input ③ 5 seconds or more	←	○	○	Restart after engine stall - Not possible	Distributor (P1-25) · Wire harness and connector (G,NE signal system) · Engine control computer (P1-27)
		[Rotation signal system 1 (G-]	① During cranking ② G-system	←				
P1335	13	Rotation signal system 2 (NE)	① Engine speed 1500r/min or more ② NE signal is not input ③ 1 second or more	②NE signal between 2 pulses of G signal is other than 12 vals.	x	○		· Distributor (P1-25) · Wire harness and connector (NE signal system) · Engine control computer (P1-27)
P1300	14	Ignition signal system (IGF, IGT)	① At idle rotation ② IGF signal is input even though IGT signal is output Not done ③ 1 second or more	←	○	○		①Ignition coil (P1-72) ②Wire harness and connector (イグナイター+B系統, IGT, IGF [System ignition coil +B system/ ③Engine control computer (P1-27 (IGT, IGF signal waveform)) *If ① and ② are normal, judge according to ③. • IGT OK: IGF confirmation NG: ECU replacement •IGFOOK: ECU replacement NG: Igniter replacement
——*1	16	ECT CPU error	① IG switch ON ②ECT CPU error ③ 1 second or more	←	○	x	Unable to change speed (Only manual operation possible)	· Engine control computer
P0130	21	O2 sensor signal system (OX)	① After engine warm-up, engine speed ① 2500 r/min or more ② O_2 sensor output voltage amplitude is less than 0.3 V ③ 60 seconds or more ④ 2 trips*2	② ③ same as normal	x	○	Poor emissions	· ○esensor · Engine control computer (P1-27)
P0135		○Sensor heater 異常 (HT)	① IG switch ON ② O_2 sensor heater circuit disconnection ③1 second or more	←			· Emission sensor (P1-26) defective during warm-up	· Wire harness and connector (0: sensor heater system) · Engine control computer (P1-27)
P0115	22	Water temperature sensor signal system (THW, E2)	① IG switch ON ② Short circuit or disconnection of water temperature sensor circuit ② ③ More than 1 second ③	① Same as normal Less than 1 second	○	○	Poor startability when cold / water temperature sensor (P1-25)	· Wire harness and connector (Water temperature sensor heater system) · Engine control computer (P1-27)

*1 Since next-generation diagnostic control is performed by ECTCPU, code 16 cannot be read by diagnostic tool S2000.

*2 When diagnostic contents ①, ②, and ③ are once memorized, and after IG OFF ON, diagnostic contents ①, ②, and ③ are met again.

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code number SAE	code number lamp	Diagnosis item [terminal symbol]	Diagnosis contents ① Diagnosis conditions ②Normal state ③Abnormal period ④Other) Normal mode	check mode	Warning light (MIL)	Memory	Main malfunction phenomena	Inspection area
P0110	24	Intake temperature sensor signal system (THA, E2)	① IG switch ON ② Short circuit or disconnection of the intake temperature sensor circuit ③ 1 second or more	① ② · Same as normal ③Less than 1 second	×	○	Poor drivability/	Intake temperature sensor (P1-25) wire harness and connectors (Intake temperature sensor signal system) · Engine control computer (P1-27)
P0171	25	Lean abnormal system (OX)	① Engine rotation speed after engine Sakura machine 250r/min or more ② 02 sensor outputs rich signal Do not force ③ For more than 90 seconds ④ 2 trips	① ② ③ same as normal	×	○	Poor starting, poor idling Poor drivability Engine stall	· Ignition system (secondary system) · Spark plug (P1-4) · Ignition coil (P1-72) · Intake system · Vacuum sensor (P1-23) · Wire harness and connector (○: Sensor system) ·Fuel system · Injector (P1-22) ·Fuel pressure check (P1-5) Engine control computer (P1-27)
P0105	31	Vacuum sensor ① IG switch ON signal system (PIM, VCC, E2)	② Short circuit or disconnection of vacuum sensor circuit ② ③ More than 1 second	① ③ · Same as normal less than 1 second	○	○		· Vacuum sensor (P1-23) · Wire harness and connector (vacuum sensor system) · Engine control computer (P1-27)
P0120	41	Throttle position sensor signal system (IDL, VTA, E2)	① IG switch ON ② Throttle position sensor ② Short circuit or disconnection ③ Less than 1 second than 5 seconds	① · Same as normal ② or ③ More	×	○	Faulty switching point engine stall	· Throttle position sensor (P1-24) · Wire harness and connector (Throttle sensor system) · Engine control computer (1-27)
P0500	42	Speed sensor signal system (SPD) M/T	① After engine warm-up, when running at engine speed of 2000~5000r/min ② Speed sensor signal is not input ③10 seconds or more	② During check mode, TcE1 of the diagnosis connector until the terminals are shorted. Speed sensor signal is not input	○	○	——	· Speed sensor (P6-35) · Wire harness and connector (speed sensor system) · Engine control computer (P1-27)
		ECT	① When the vehicle is running, shift position P, N Out of range ② Speed sensor signal is not input ③ More than 5 seconds				Faulty switching point	
P0325	52	Knock sensor signal system (KNK 1)	① After engine warm-up, engine rotation speed When running at 1800~5000r/min ② Short circuit or wire in knock sensor circuit ③ More than 5 seconds	←	○	○	Deterioration of knocking level	· Knock sensor tightening failure · Knock sensor · Wire harness and connector (knock sensor system) · Engine control computer (P1-27)
P1605	53	CPU for knock control ① system	Engine speed 500~6000r/min ② CPU for knock control System error ③ 1 second or more	←	○	×		· Engine control computer

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T0045784

Individual inspection

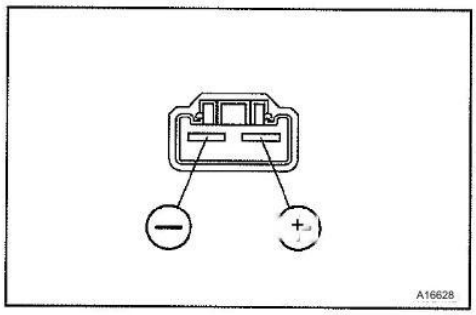
cold time and warm time during ordering refer to the temperature of the main body of the part to be inspected. In addition, the temperature setting range is set as cold time (-10 to 50°C) and warm time (50 to 100°C).

fuel pump

1 Resistance check

(1) Measure the resistance between the terminals using a Toyota electrical tester.

Reference 0.2~3.00 (approx. 20°C)



2 Operation check

(1) Apply battery voltage between the terminals and check that the motor rotates. The inspection

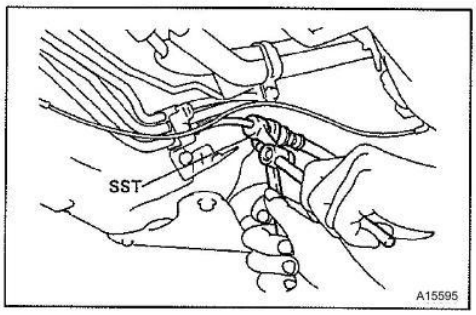
should be done in a short time (10 seconds or less).

- Move the pump as far away from the battery as possible. -Switching action must be performed on the battery side.

injector

1 Resistance check

(1) Measure the resistance between the terminals using a Toyota electrical tester. Standard value 13.1~14.50 (about 20°C)

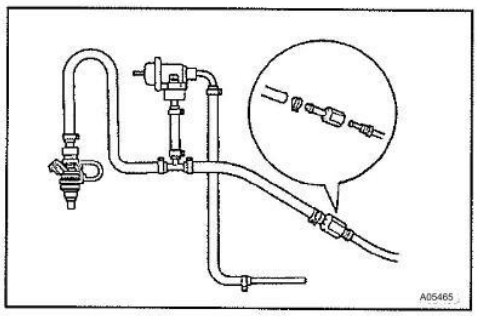


2 Fuel injection amount and leakage check

Caution: Perform inspection in a well-ventilated area, being careful of fire.

(1) Use SST to disconnect the fuel main tube and fuel main hose. SST

09631-22020



(2) Assemble the injector and pressure regulator to the measuring tool.

S S T 09268-41091 09268-52011 90467-13001 95336-08070

Install the SST with the injector fitted with the O-ring and grommet.

(3) Attach the EFI inspection wire to the injector connector.

Attach F.

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(4) Operate the fuel pump.

("Engine control system" - "Functional inspection"

-Refer to "Fuel pump operation check and fuel leak check")

(5) Attach the vinyl tube to the tip of the injector.

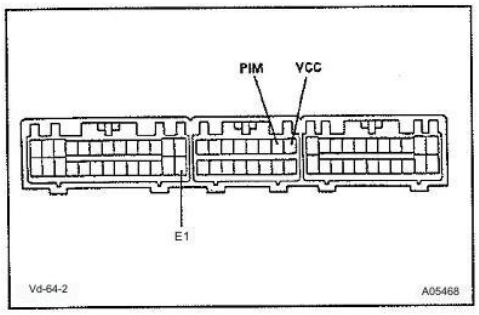
(6) Place the graduated cylinder at the tip of the injector.

(7) Connect the EFI inspection wire F to the battery and measure the injection amount.

Standard value 34~44mL/15 seconds

(8) Remove the EFI inspection wire from the battery and check for leakage from the nozzle.

Standard value 1 drop or less/1 minute



vacuum sensor

1 Output pressure check

terminal	Measurement condition	Reference value [V]
VCC↔E 1	Engine stopped, IG switch ON	4.5~5.5
PIME 1	Vacuum sensor open to atmosphere	3.3~3.9
	Apply negative pressure of 67kPa (500mmHg)	1.3~1.9

JB3317

throttle body

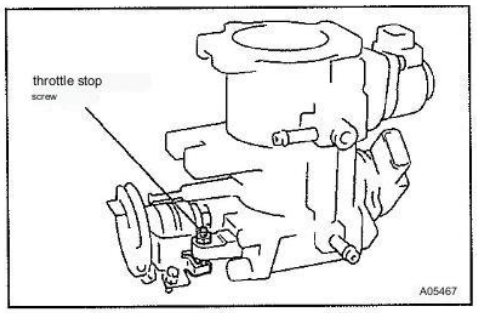
1 Throttle body inspection

(1) Check the following items.

① Opening and closing the throttle valve

② Throttle valve shaft play

③Clogging of each port



2 Throttle stop screw inspection

(1) With the throttle valve in the fully closed position, check the clearance between the throttle stop screw and the lever.

Criteria: No gaps

If it is outside the standard, adjust the clearance.

Since the throttle stop screw is precisely adjusted,

Do not make adjustments unless necessary.

3 Gap adjustment

(1) Loosen the lock nut on the throttle stop screw, and

Loosen the screw until it does not touch the throttle lever.

(2) Check that the throttle valve is fully closed.

(3) Tighten the throttle stop screw and release the throttle lever.

Tighten an additional 1/4 turn from the point where it made contact.

(4) Tighten with the lock nut.

(5) Inspect the throttle position sensor.

(6) Apply yellow paint to the throttle stop screw. こ封印す

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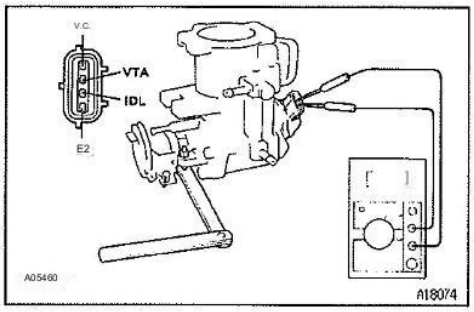
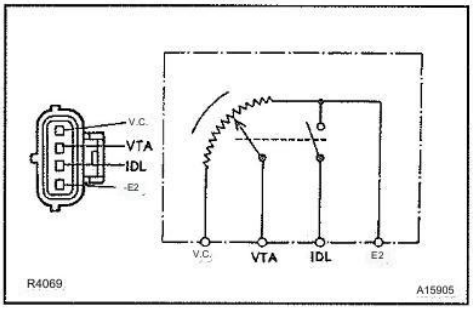
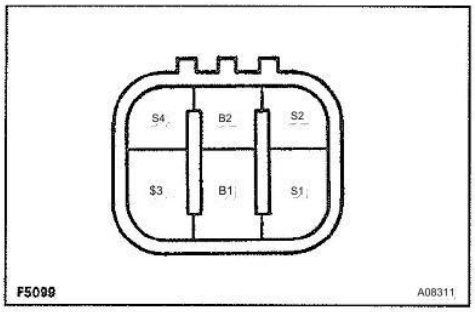
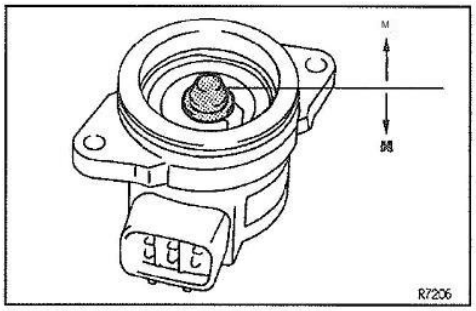








throttle position sensor

1 Continuity check

(1) Insert a thickness gauge between the throttle stop screw and lever, and use the Toyota Electrical Tester to check IDLE.

Check for continuity between the two terminals.

Standard: 0.5mm Continuity
1.0mm No continuity

2 Resistance check

terminal	Measuring conditions	Standard value [K2]
VC↔E2	Always	2.5~2.9
VTA↔E2	Throttle lever fully closed	Approx. 0.2~5.7
	Throttle lever fully open	Approximately 2.0~10.2

JB3318

ISCV

1 Resistance check

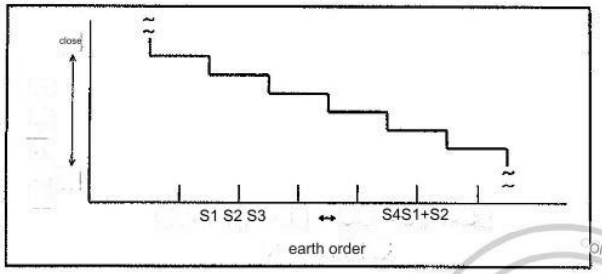
terminal		Measurement condition	Standard value [2]
B1	↔ S1, S3	Cold time*	31-61
		Warm time*	38~71
B2	↔ S2, S4	Cold time*	31~61
		Warm time*	38~71

JB3319

2 Operation check

(1) Apply battery voltage to B1 and B2.

(2) Check that the valve opening changes when S1, S4 and ground are operated.



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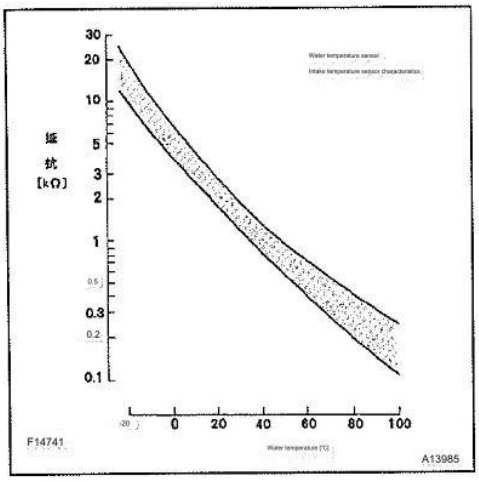


Water temperature sensor and intake temperature sensor

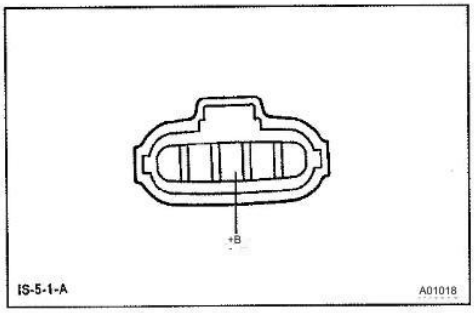
1 Resistance check

(1) Measure the resistance between the terminals using a Toyota electrical tester.

Standard value 2~3 kΩ (Water temperature 20°C)

0.2~0.4KΩ (Water temperature 80°C)

1



igniter

-Inspection of the igniter individually is not possible.

· Diagnosis 14 is output when the igniter is defective.

1 Input voltage check

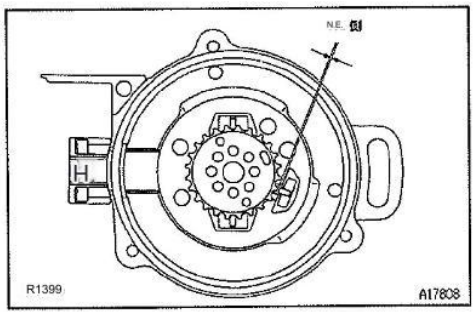
(1) Disconnect the connector.

(2) Turn on the ignition switch.

(3) Measure the voltage between the +B terminal and ground on the wire harness side.

Standard value 10~14V

(4) Connect the connector.

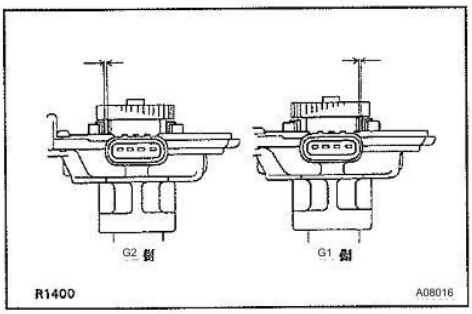


Distributor

1 Air gap inspection

S S T 09242-00020 09242-00060

Measurement points	Tools used or SST	Standard value [mm]
N.E.	sickness gauge	0.2~0.5
G1	wire gauge set	0.2~0.5
G2		



JB3321

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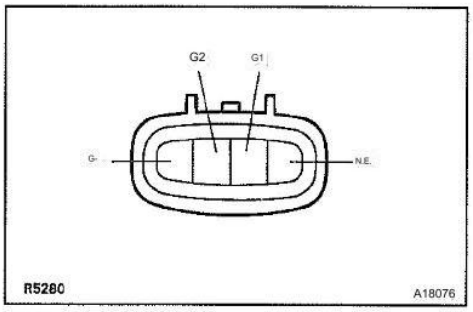
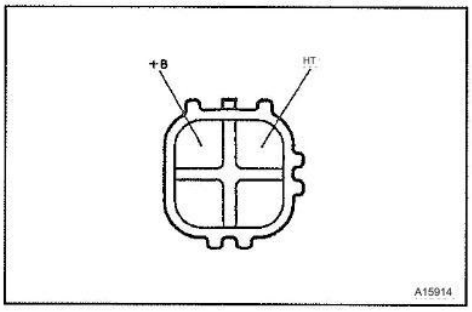


2 Pickup coil resistance check

terminal	Measurement condition	Standard value [2]
G1 ↔ G−	Cold time*	125~200
	"Hot time"*	160~235
G2 ↔ G−	Cold time*	125~200
	Temperature time*	160~235
NE+G-	Cold time*	155~250
	溫 間 時*	190~290

JB3322



O2 sensor (heater)

1 Resistance check

(1) Measure the resistance between the BHT terminals using a Toyota electrical tester.

Standard value 11.7~14.32 (about 20°C)

exhaust temperature sensor

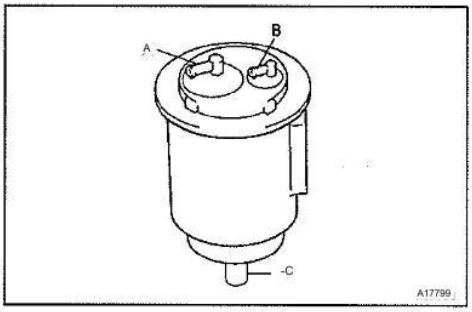
1 Resistance check

(1) Place about 40mm from the tip of the sensor into the center of the flame on a gas stove, etc., and heat it until it becomes red hot.

(2) Turn off the gas stove and measure the resistance value between the connector terminals. The resistance value increases as the reference time passes.

注意 Do not touch the red-hot sensor, as it will not return to room temperature until about 15 minutes have passed.

(reference) 0.38~0.48k2 (900°C), 100k or more (normal temperature)



canister

1 Ventilation check

Inspection guidelines	standard
Apply negative pressure to B port with Mighty Pack	There must be ventilation
Hold the B port with your finger, A bow Breathe in from	There should be ventilation from the C port.
Breathe into A port	B port Ventilation from C port being

JB3485

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VSV (for canister purge)

1 Resistance check

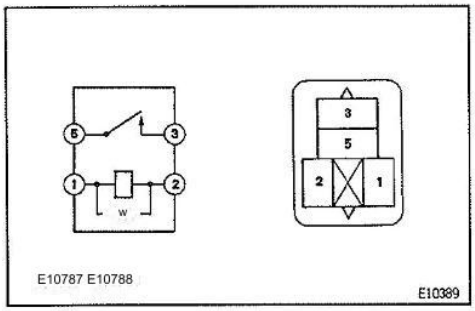
(1) Measure the resistance between the terminals using a Toyota electrical tester.

Standard value 30~332 (approx. 20°C)

2 Ventilation check

(1) Apply battery voltage between the terminals and check for ventilation. Standard energized state:

With ventilation When de-energized state: No ventilation



EFI main relay and circuit opening relay

1 Resistance and continuity check

(1) Measure the resistance between each terminal using a Toyota electrical tester.

Standard value Between 12 terminals 70~1200 (approx. 20°C)

Between 3~5 terminals 10M2 or more

(2) When applying battery voltage between terminals 12, check for continuity between terminals 3 to 5. With reference continuity

engine control computer

1 Computer operation check

(1) Connect the mini test leads to the Toyota Electrical Tester and measure the voltage between each terminal.

- Inspect the connector from the back side while it is connected to the computer.
- Before measurement, perform a power supply check (10 to 14V when IG is ON) and a ground check (50V or less between each ground terminal ↔ engine and body when IG OFF).
- When measuring voltage, make sure that the tester is set to the voltage range.

(2) Use an oscilloscope to confirm that pulses are generated between each terminal.

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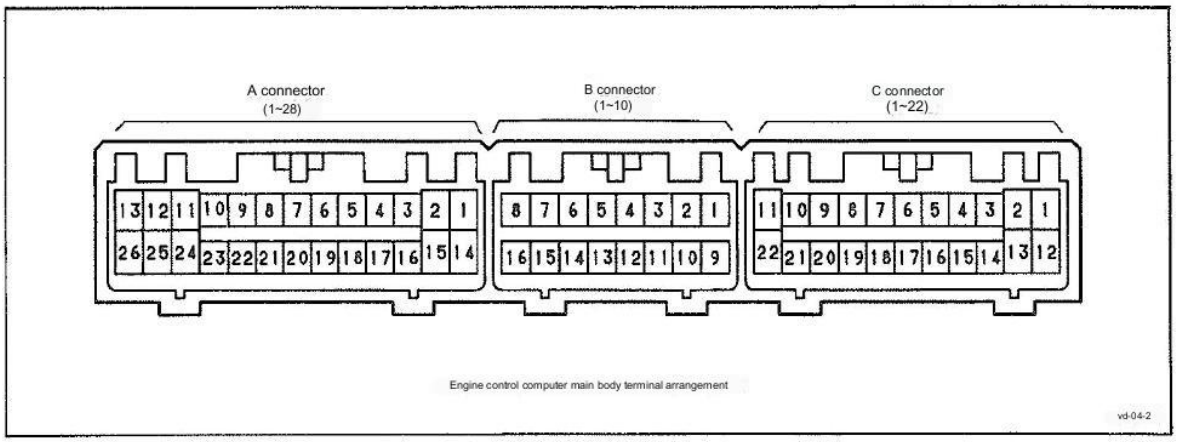

JB3324

A connector	Terminal Nα	13	12	11	10	9	8	7	6	5	4	3	2	1
	Name	E01		#10 #20	ISC 1	ISC 2	ISC 3	ISC 4	(3)*2	G2	N.E.	IGF	(S1)	(SL)
	Terminal Na	26	25	24	23	22	21	20	19	18	17	16	15	14
	Name	E02		HT				IGT		G1	G-	PRG	(S2)	E1

B connector	Terminal Na	8	7	6	5	4	3	2	1
	name		THWO	OX	KNK THW THA			PIM	VCC
	Terminal Na	16	15	14	13	12	11	10	9
	name	(L)	T.C.	SIL	CCO	IDL	VTA	(2)	E2

C connector	Terminal Na	11	10	9	8	7	6	5	4	3	2	1
	Name	STA	AC 1	SPD	ACMG	(OD2)*1 (PWRL)*2	ELS	W	MREL	EGW	IGSW	BATT
	Terminal No.	22	21	20	19	18	17	16	15	14	13	12
	name	(NSW)	(P)	(IND)	ELS 3	ELS2	(MSW)	(RSPD)*1	STP	FC	AC 2	+B

( ).....A/T car * 1...Straight shift car *2.....Gate shift vehicle

JB3325

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Inspection system	terminal	input/output	Conditions	Reference value [V]
power system	BATTE1	input	Always	9~14
	+B, IGSW ↔ E1	input	Engine stopped, IG switch ON	9~14
	VCC ↔ E1	output	Engine stopped, IG switch ON	4.5~5.5
Throttle position sensor system	IDL ↔ E1	input	Throttle valve fully closed	0~3
			throttle valve fully open	9~14
	VTA E1	input	Throttle valve fully closed	0.3~0.8
			throttle valve fully open	3.2~4.9
Water temperature sensor system	THW E1	input	Cooling water temperature 60~120°C (warm up)	0.2~1.0
Intake temperature sensor system	THA↔ E1	input	Intake air temperature 0~80°C (warming up)	0.5~3.4
Exhaust temperature sensor system	CCO ↔ E1	input	Exhaust temperature 950°C or less	1.0~5.5
Vacuum sensor system	PIM E1	input	When applying negative pressure of 67kPa (500mmHg)	1.3~1.9
			When open to atmosphere	3.3~3.9
Rotation signal system	NE G-	input	After warming up, at idle speed	waveform 1
	G1 → G-	input		
	G2 ↔ G-	input		
speed sensor system	SPD ↔ E1	input	When running at approximately 20km/h	waveform 2
Ignition signal system	IGT E1	output	After warming up, at idle speed	waveform 3
	IGF ↔ E1	input	After warming up, at idle speed	
Injection signal system	#10, #20 E1 output		After warming up, at idle speed	waveform 4
Exhaust temperature warning system	EGW E1	output	Short circuit between the CCO E1 terminals of the engine control computer (when the exhaust temperature warning lamp is lit)	0~3
			After warming up, when idling (when the warning lamp is off)	9~14
Check engine warning system	W E1	output	Disconnect the water temperature sensor connector (when the check engine warning light is on)	0~3
			After warming up, when idling (when the warning lamp is off)	9~14
neutral start switch system	NSW E1	input	Shift position P, N range	0~3
			Shift position Other than P, N range	9~14
ISC system	ISC1~4 E1	output	After warming up, at idle, A/C OFF ON	waveform 5
VSV series	PRG → E1	output	Engine stopped, IG switch ON	9~14
			After warming up, when idling (while the vehicle is stopped), the intake air temperature is 40°C or higher.	waveform 6
O2 sensor heater system	HT-E1	output	After warming up, when idling (cooling water temperature 20°C or higher)	0~3
			Maintain engine speed at 4000r/min or higher	9~14
starter type	STA E1	input	During cranking	6 or more

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Inspection system	Terminal input/	output	fixed conditions	Reference value [V]
Brake switch system	STP ↔ E1	input	Stop lamp switch ON	7.5~14
			Stop lamp switch OFF	0~1.5
O_2Sensor system	OX ↔ E1	input	After warming up, keep the engine speed at 2500r/min for 2 minutes.	waveform 7
knock sensor system	KNK → E1	input	After warming up, keep the engine speed at 4000r/min	waveform 8
Main relay system	MREL E1	output	Engine stopped, IG switch ON	9~14
			More than 2 seconds passed after the engine stopped and the IG switch was turned off.	0~1.5
electrical load system	ELS E1	input	Tail lamp ON	7.5~14
			Tail lamp OFF	0~1.5
	ELS 2 E1	input	Defogger switch ON	7.5~14
			Defogger switch OFF	0~1.5
	ELS 3 E1	input	Blower switch ON	7.5~14
			Proa switch OFF	0~1.5
A/C switch system	AC1 E1	input	A/C ON (Magnetic clutch ON)	0~3
			A/C OFF	9~14
A/C cut system	ACMG ↔ E1	output	A/C ON (Magnetic clutch ON)	0~3
			From the above state, throttle valve fully closed → fully open	9~14
A/C torque signal system	AC2E1	input	When stopped with A/C ON (N range), A/C idle up ON (sensor 7°C or higher after evaporation)	0~3
			While stopped with A/C ON (N range), A/C idle up OFF (sensor below 6°C after Evabo)	9~14
A/C water temperature signal system	THWO E1	output	Engine stopped, IG switch ON	waveform 9
circuit opening relay system	FC+E1	output	Engine stopped, IG switch ON	9~14
			At idle rotation	0~3
Test terminal system	TC ↔ E1	input	Engine stopped, IG switch ON	9~14
			Diagnosis connector TE, short between terminals	0~3
Diagnosis communication system	SIL+E1	output	Diagnostic tool S2000 is connected to DLC3 and communication is established.	Pulse generation
Earth type	E1 E2 E01 E02 ↔ body earth earth		(Himitsu inspection)	(Constant conduction)

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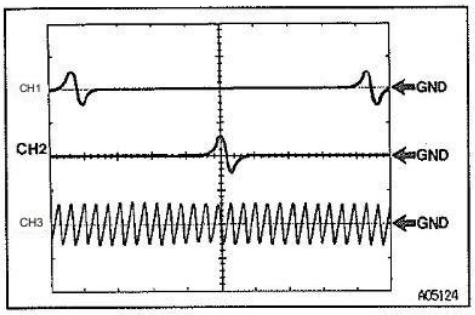
oscilloscope waveform



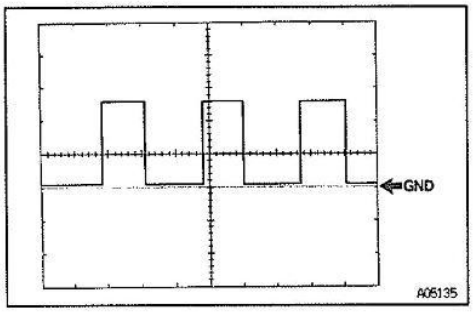
waveform 1

Measurement terminal CH1: G1G- CH2: G2-G-

CH3: NE G-

Instrument set 5V/DIV, 20ms/DIV

Measurement conditions: After warming up, during idling As the engine speed increases ① The amplitude of each waveform increases. ② Each waveform period becomes shorter.



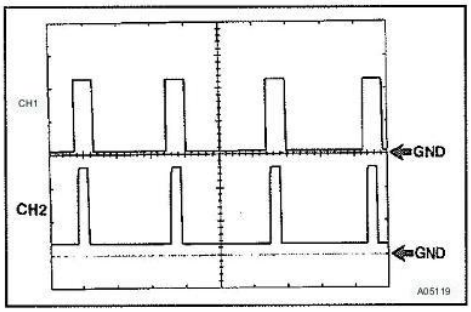
waveform 2

Measurement terminal SPD E1

Instrument set 5V/DIV, 20ms/DIV

Measurement conditions: Running at approximately 20km/h

- As the vehicle speed increases, the waveform period becomes shorter.
- The figure shows the case where the SPD is also connected to systems other than the engine. If only the engine system is connected to the SPD, the voltage will be approximately 5V.



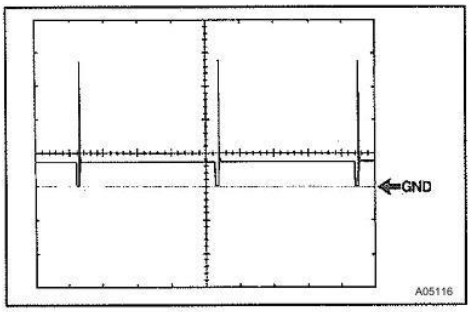
waveform 3

Measurement terminal CH1: IGT E1 CH2: IGF E1

Instrument set 2V/DIV, 10ms/DIV

Measurement conditions: After warming up, at idle speed!

As the engine speed increases, the waveform period becomes shorter.



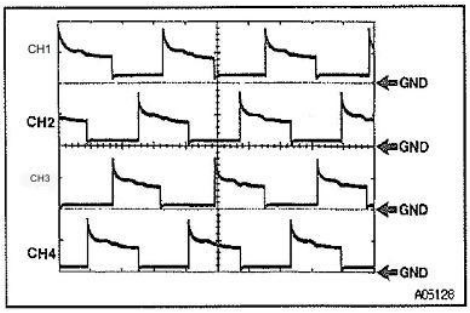
waveform 4

Measurement terminal #10, #20 E1

Instrument set 20V/DIV, 20ms/DIV

Measurement conditions: After warming up, during idling

As the engine speed increases, the waveform period becomes shorter.



waveform 5

Measurement terminal CH1: ↤ ISC1 E1 CH2: ISC 2↔E 1

CH3: ISC 3↔E 1 CH4: ISC 4↔E 1

Instrument set 20V/DIV, 10ms/DIV

Measurement conditions: After warming up, at idle, air conditioner switch OFF ON

When the air conditioner switch is OFF ON (idle rotation speed increased)

Power is applied in the order of ISC 4 → ISC 3-ICS 2 ISC1, and the wave as shown in the figure is generated.

The shape is output.

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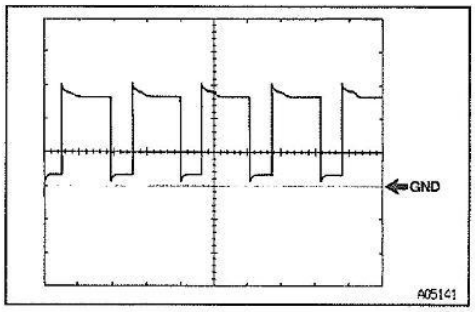


waveform 6

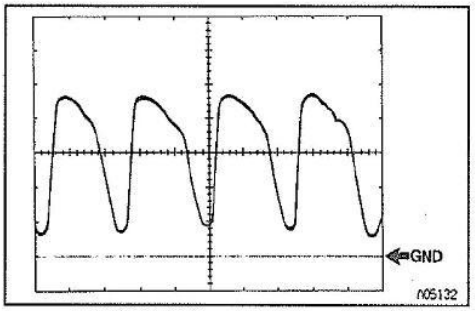
Measurement terminal PRG E 1

Instrument set 5V/DIV, 50ms/DIV

Measurement condition: After suction machine, at idle rotation

Intake temperature 40°C or more

NOTE
- Depending on the situation, the waveform shown in the figure may not occur.
- The duty ratio may differ depending on the situation.

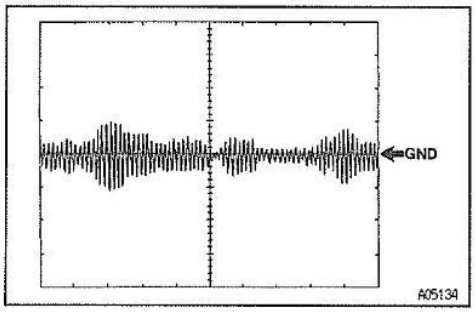


waveform 7

Measurement terminal OX E1

Instrument set 0.2V/DIV, 0.5ms/DIV

Measurement conditions Warm up: After that, keep the engine speed at 2500r/min.



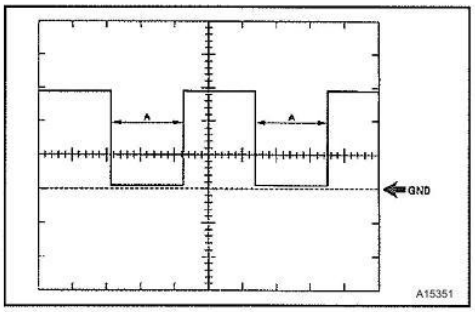
waveform 8

Measuring terminal KNK→E 1

Instrument set 0.5V/DIV, 1 ms/DIV

Measurement conditions: After warming up, keep the engine speed at 4000r/min

NOTE
- The waveform amplitude increases as the engine speed increases.
- The waveform amplitude differs slightly depending on the vehicle.



waveform 9

Measuring terminal THWO E1

Instrument set 5V/DIV, 0.1ms/DIV

Measurement conditions Engine stopped, IG switch ON

<Reference> A changes depending on the cooling water temperature.

	Below 35°C	Approximately 75°C	90°C or higher
A	ms	ms	85ms

2 Computer data inspection

(1) Check using the diagnostic tool S2000.

3 Precautions when reading computer data

- Computer data values vary widely due to slight differences in measurement, differences in the measurement environment, changes in the vehicle over time, etc., making it difficult to provide clear reference values (judgment values). Therefore, within the reference value Even if there is, it may cause problems.· For subtle decreases such as heavy breathing or rough idling, use the same type of car. Using a method of comparing data collection under the same conditions, a computer It is necessary to make a comprehensive judgment based on all data items.

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Item name	Item name explanation	Inspection conditions	Reference	Main inspection items in case of abnormality
F-S1	Indicates the execution status of air-fuel ratio F/B (feedback) control.	2500r/min at constant engine rotation	In progress 1=F/B normal implementation In progress 2=O2 sensor abnormality Not in place 1=F/B condition not met Not in place 2 = System normal Not in place 3=System abnormality	OX voltage
CALO	Represents the size of the engine load. Display range: 0~100% The higher the value, the higher the load.	At idle rotation	0~50%	Air cleaner condition Accelerator cable condition Throttle valve condition
		2000r/min	0~50%	
		At 3000r/min	0~50%	
		During stall rotation	70~100%	
THW	Represents engine coolant temperature. Display range: -40~140°C	Cold start → complete blower	gradual increase	THW voltage
		At full suction	80~95°C	
SFT 1	Represents F/B noon. Display range: -100% to 99.296 -100 to 0% indicates a decrease in the injection amount, and 0 to 99.2% indicates an increase.	2500r/min at constant engine rotation	-20~+20%	OX voltage
LFT 1	Represents the learning value for correcting air-fuel ratio F/B control. Display range: -100%~99.296 10% represents the stoichiometric air-fuel ratio, -100~0% represents the rich side, and 0~99.2% represents the lean side.	2500r/min at constant engine rotation	-20~+20%	OX voltage
MAP	Represents intake manifold pressure. Display range: 0~225KpaG	When the engine is stopped (IGON)	100～102KpaG	VCC, PIM voltage
		At idle rotation	10～50KpaG	
		2000r/min	10～50KpaG	
		At 3000r/min	10～50KpaG	
ESPD	Represents engine rotation speed.	When the engine is stopped (IGON)	75r/min	NE,G-signal
		At constant engine rotation	no big changes	
SPD 1 Indicates vehicle speed.		When stopped	0km/h	SPD signal
		When driving at a constant speed	no big changes	
IGT	When igniting the 1st and 6th cylinders represents the period. Display range: BTDC63.5~ATDC61°CA	During cranking	7°CA	PIM voltage NE signal
		When idling	8～20℃A	
		At 2000r/min	20~35°CA	
		At 3000r/min	25~40°CA	
THA	Represents the intake air temperature. Display range: -40~140°C	———	0~50°C	THA voltage
THPS	Represents the opening degree of the throttle valve. Display range 0~100%	When throttle valve is fully closed	0~5%	VCC, VTA voltage
		When throttle valve is fully open	80~100%	
		Throttle valve fully open → fully open	Continuously changing	

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item name	Item name explanation	Inspection conditions	Reference	Main inspection items in case of abnormality
OS11	Represents the output voltage value of the O2 sensor. Display range: 0~1.275V	2500r/min At constant engine rotation	0～1.0V	OX, PIM, THW voltage injection amount
FT11	Represents F/B amount. Display range: -10096~99.29% -100~0% indicates a decrease in the injection amount, and 0~99.2% indicates an increase.	2500r/min At constant engine rotation	-20~+20%	OX voltage
INJ	Indicates the injection time of the No. 1 cylinder injector. Display range: 0~32.6ms	Cold start → complete warm-up	gradually decreasing,	PIM, THW, OX voltage
		At idle rotation	1.0～3.0ms	
		2000r/min	1.0～3.0ms	
		At 3000r/min	1.0～3.0ms	
ISCS	ISCV display range: 0~125 steps	When aging is stopped (IN ON)	125 steps	IDL, THW voltage | Each switch signal
		Cold start → complete warm-up	gradually decreasing	
		At idle rotation	20~50 steps	
		A/C OFF→ON	10~30 step increase	
		A/T N-D range	2~10 step increase	
		Light defogger OFF→ON	3~10 step increase	
STA	Represents starting.	IG ON→Cranking	OFF→ON	Each switch signal
IDL	Indicates that the throttle valve is fully closed.	Throttle valve fully closed → fully open	ON→OFF	
A/C	Indicates that the air conditioner is operating.	Air conditioner OFF ON	OFF→ON	
NSW	Indicates shift lever position N (P).	Shift lever ND	ON→OFF	
ELS	Represents the electrical load generation width.	Light defogger OFF-ON	OFF→ON	
STP 1	Indicates that the brake pedal is being depressed.	Brake pedal released→depressed	OFF→ON	
FCI	Indicates that the fuel cut is in operation when the engine is running out of speed.	When descending rotation after racing	OFF→ON	IDL voltage
FCTM	Fuel cut operation at extremely light load Represents the inside.	Driving on the long slope	OFF→ON	
AMG	Air conditioner magnet clutch relay	A/C OFF ON	OFF→ON	
FPC	FC/FPC control	E/G stop → cranking	OFF→ON	
PRG	Purge VSV	After warming up, when idling, intake air temperature is 40°C or higher	OFF→ON	

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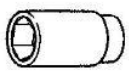
TOC49589

Engine ASSY

Preparation items

1

S S T

	09213-54015	crankshaft pulley holding tool	For fixing crankshaft pulley
	(90119-08216)	bolt with washer	For fixing crankshaft pulley
	09228-07501	oil filter wrench	For oil filter removal
	09330-00021	Companion flange holding tool	For fixing crankshaft pulley
	09816-30010	oil pressure switch socket	Removal and removal of oil pressure switch and knock sensor

tool

09258-00030	hose plug set	For maintaining hose airtightness
Engine sling device 09090-04020	70277	Engine removal/removal
chain block	55801	Engine removal/removal
Deep socket wrench (14mm)	10203	Exhaust front pipe removal and removal

Oils and fats/others

engine hanger	55610	Engine removal and removal (12281-70030)
bolt	54643	Engine removal and removal (90119-10062)
Toyota genuine auto fluid D-II	30306	For automatic transmission replenishment
Toyota genuine long life coolant	32001	For cooling water injection
Toyota genuine engine oil	32103	For replenishment
Adhesive 1324	50401	For oil pressure switch application
rope or wire	52014	For hanging each part

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place of wood 53601	Engine removal/removal
saucer 53001	Oil and cooling water reservoir

1

T0048500

Engine ASSY removal and removal

Tightening torque list

Tightening point			Tightening torque [N· m {kgf· cm)]
A/C compressor		× Compressor bracket	24.5 (250)
P/S pen pump	×	adjusting bolt	39.2 (400)
		through bolt	57.8 (590)
fuel main hose		× Fuel pipe No. 1	29 (300)
exhaust front pipe	x	exhaust manifold	62.0 (630) *
		converter	43.0 (440)
sliding yoke	x	intermediate shaft	35.3 (360)
		Steering gear ASSY	35.3 (360)
Front suspension cross member		engine mounting insulator	51.5 (525)
		Steering gear ASSY	68.6 (700) (right side) 58.8 (600) (left side)
Engine rear support member	x	Engine mounting insulator RR	13.5 (135)
		body	38.2 (390)
stiffener plate	x	cylinder block	37.2 (380)
		clutch housing	37.2 (380)
clutch housing		starter	39.0 (400)
		× Cylinder block	71.6 (730)
		Clutch release cylinder (M/T vehicle)	11.8 (120)
Flywheel (M/T car)	×	clutch cover	19.1 (195)
		Crankshaft	73.5 (750)
Drive plate (A/T vehicle)	×	torque converter	41.1 (420)
		Crankshaft	73.5 (750)

*.....Non-reusable parts

JB3338

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Points to note during attachment/detachment work

1 Disconnect engine wire harness

· For the engine wiring harness, disconnect the connector on the engine control computer side and remove it together with the engine ASSY.

2 P/S vane pump removal

· Remove the P/S vane pump with pressure feed tube and return hose, and hang it up with wire.

3 A/C compressor removal

· Remove the A/C compressor with low and high pressure hoses and hang it up with wire.

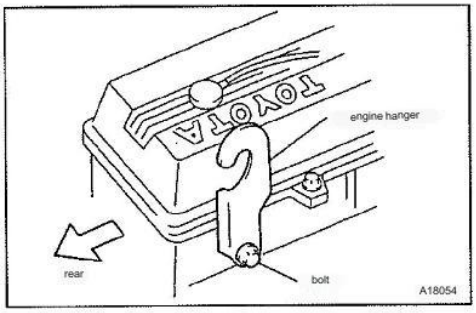
4 Steering gear ASSY removal

(1) Remove the sliding yoke.

(2) Remove the steering gear ASSY from the front suspension cross member and suspend it with a rope.

注意 Make sure that no load is applied to the pressure feed tube, return hose, tie rod, etc.

5 Attaching and removing the propeller shaft (see "Propeller Shaft" and "Rear Propeller Shaft")



6 Engine ASSY W/transaxle removal/removal

· An engine hanger (rear side) and bolts are required as preparation items to remove and install the engine ASSY W/transaxle.

Engine hanger 12281-70030

Bolt 90119-10062

T=24.5N·m {250kgf·cm}

Note Be sure to use new engine hanger mounting bolts.

Reference: Install the engine hanger on the rear side of the head.

Use an engine sling device to attach and detach the engine ASSY W/transaxle.

·After installation and removal work, remove the prepared engine hanger (rear side).

7 Removal and installation of flywheel or drive plate (Refer to "Engine body" - "Engine rear oil seal")

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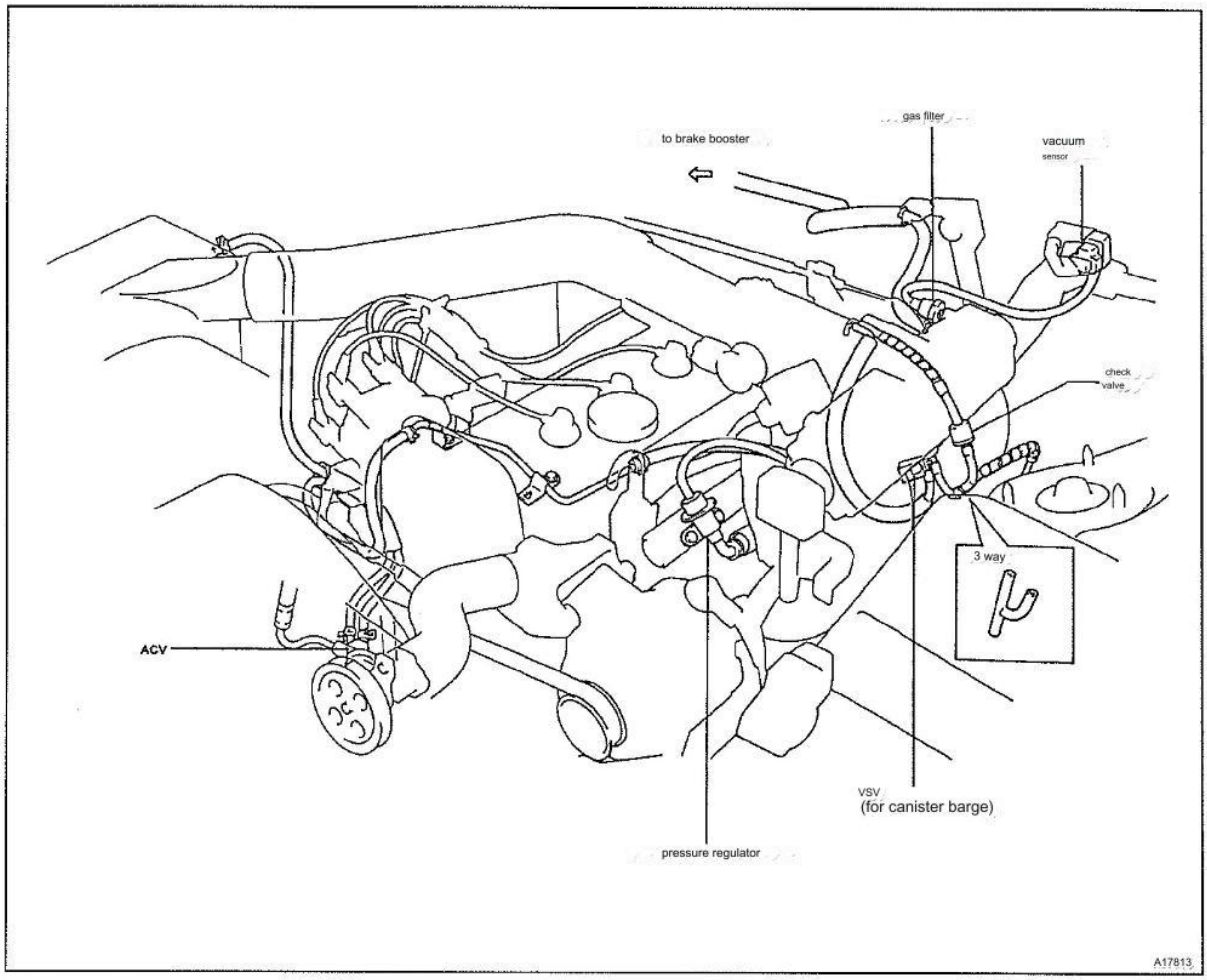
T0048591

vacuum piping

piping diagram

1



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10049592

Partial engine exploded diagram

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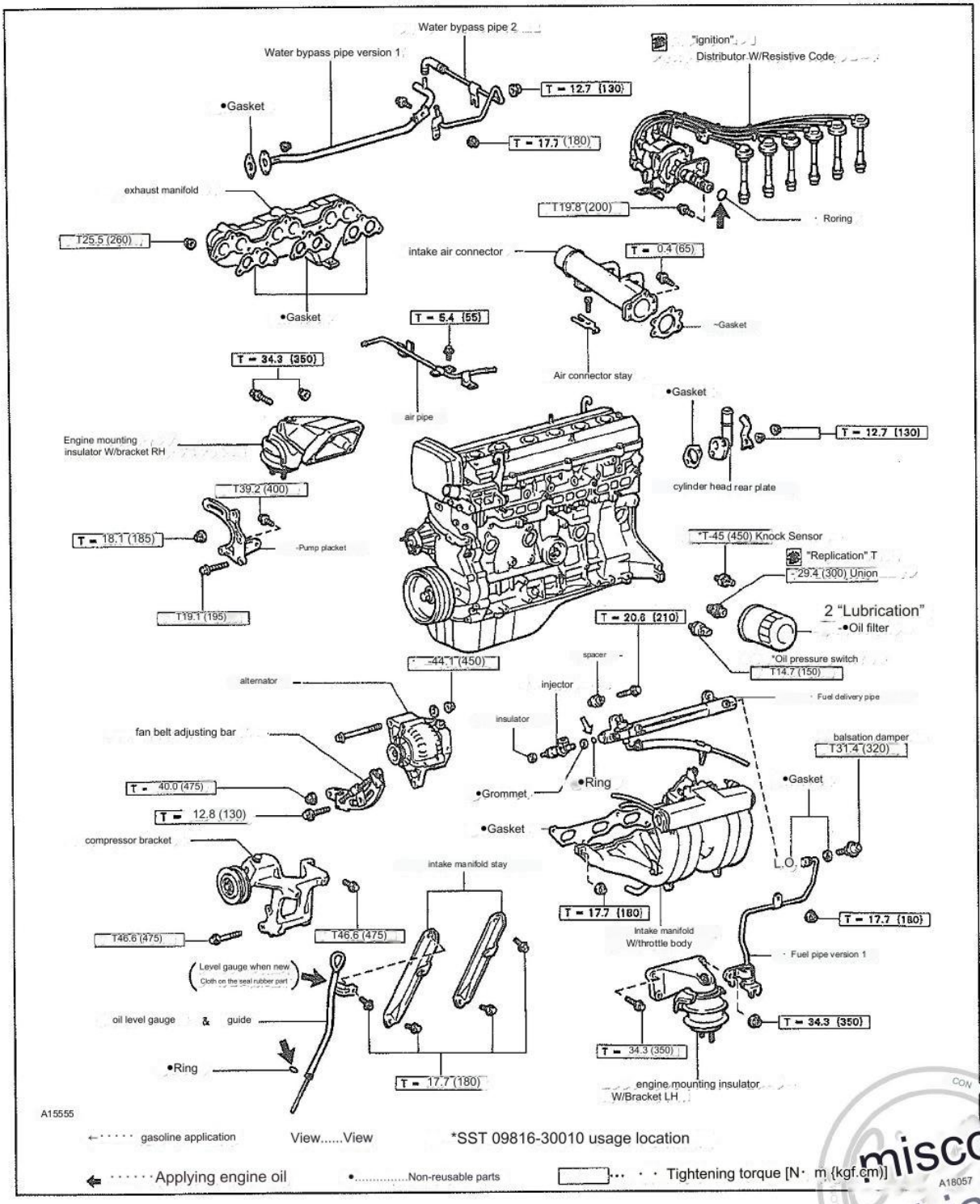

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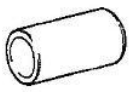
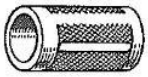
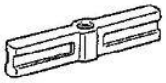
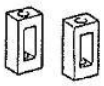
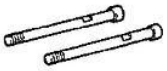
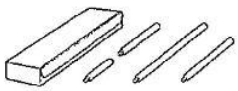
TG048S01

engine body

1

Preparation items

SST

	09213-54015 crankshaft booley holding tool	For fixing crankshaft pulley
	(90119-08216) Port with washer	For fixing crankshaft pulley
	09223-00010 Cover & Seal Replacer	For installing the crankshaft front oil seal.
	09223-15020 Oil Seal & Bearing Replacer	For engine rear oil seal installation
	09330-00021 Companion flange holding tool	For fixing crankshaft pulley
	09636-20010 Upper ball joint dust cover replacer	For installing the crankshaft front oil seal.
	09950-50010 Blur C set	
	(09951-05010) Hanger 150	For crankshaft pulley removal
	(09952-05010) Slide arm	For crankshaft pulley removal
	(09953-05020) Center bolt 150	For removing crankshaft booley
	(09954-05030) Crow №3	For crankshaft pulley removal
	09950-70010 Handle set	

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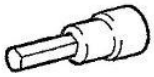
(09951-07150) Handle 150	For engine rear oil seal installation

tool

09040-00010 Hexagon wrench set	
 (09043-20080) Socket hexagon wrench 8	Cylinder head bolt removal and removal
Deep socket wrench (10mm) 10201	Camshaft bearing cap removal and removal
Deep socket wrench (14mm) 10203	Exhaust front pipe removal and removal

Oils and fats/others

Toyota genuine MP grease No. 2 30204	For oil seal lip application
Seal packing black	Cylinder head cover and camshaft base 50902 For application of bearing cap No.1
Toyota genuine long life coolant 32001	For cooling water replenishment
Sandpaper (#400) 50801	For crankshaft modification
chalk 52602	For filling in timing belt alignment mark
Toyota genuine engine oil 32103	For applying to each part
cutter knife 50601	For removing crankshaft front and engine rear oil seals.
Vinyl tape 53702	Crankshaft front and engine rear For oil seal removal

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Timing belt

T0049204

Detachment configuration diagram

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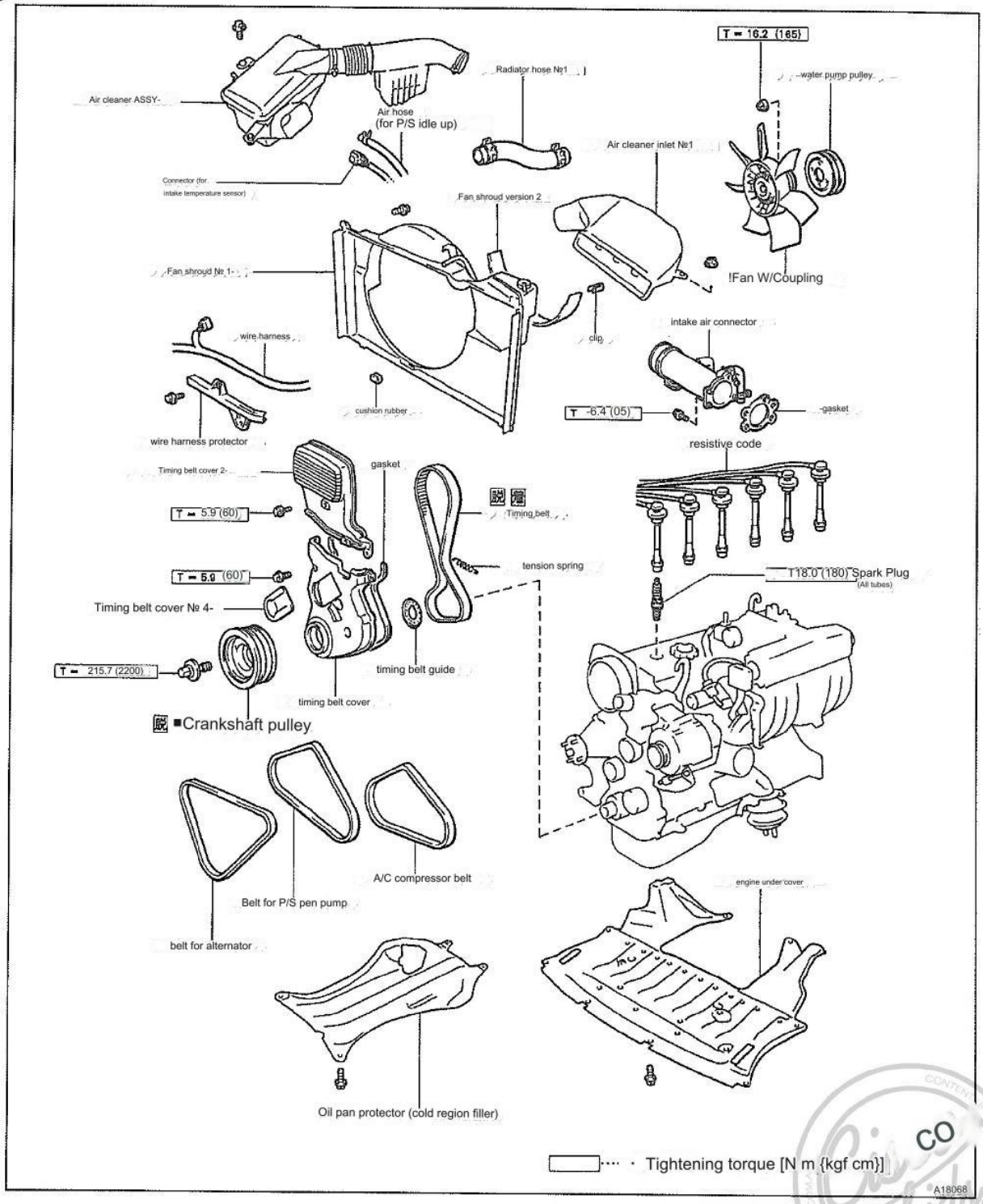

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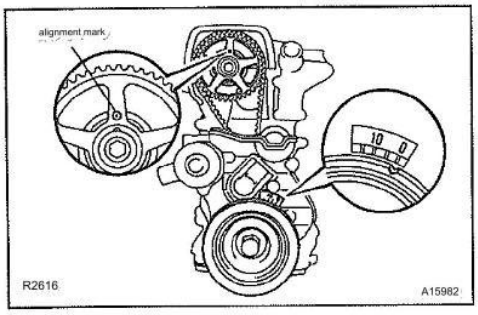
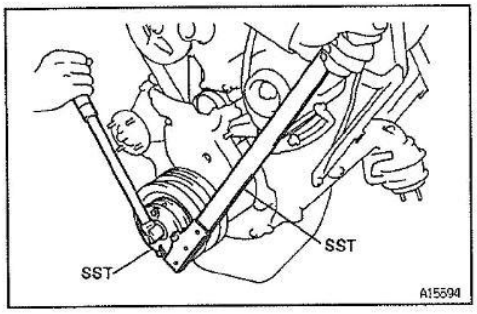


Points to note during removal work

1 Remove the spark plug

2 No.1 cylinder compression top dead center set

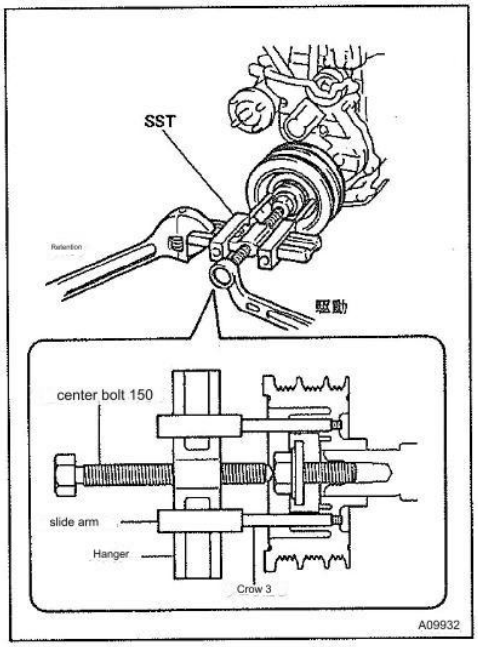


3 Crankshaft pulley removal

(1) Using SST, remove the crankshaft pulley set bolt.

SST 09213-54015 09330-00021 90119-08216

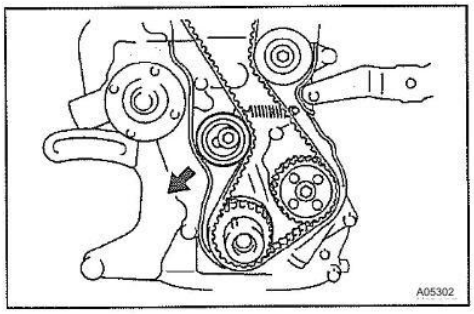
(2) Remove the crankshaft pulley by hand.



<Reference> If the pulley is tightly fitted, use the SST and pulley set bolt to remove it.

SST 09951-05010 09952-05010 09953-05020 09954-05030

Use by applying oil to the threaded part and tip of Center Bolt 150.



4 Timing belt removal

(1) Remove timing belt cover No.1.

(2) Remove the timing belt guide.

(3) Mark the rotation direction on the back of the timing belt with chalk, etc.

(4) Loosen the timing belt idler No.1 bolt.

(5) Slide timing belt idler No. 1 outward, loosen the tension on the timing belt, and secure it.

(6) Remove the timing belt.

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Inspection before timing belt installation

1 Timing belt idler No.1 and No.2 inspection

(1) Rotate the pulley by hand and check that it rotates smoothly.

(2) Check that grease is not scattered on the seal.

2 Oil pump inspection

(1) Rotate the pulley by hand and check that it rotates smoothly and that there is no play in the shaft.

(2) Check that there is no oil leakage from each part of the oil pump.

3 Timing belt inspection

(1) If the timing belt shows signs of damage, replace it with a new one.

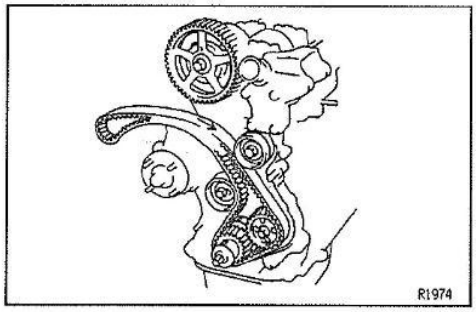
Points to note during installation work

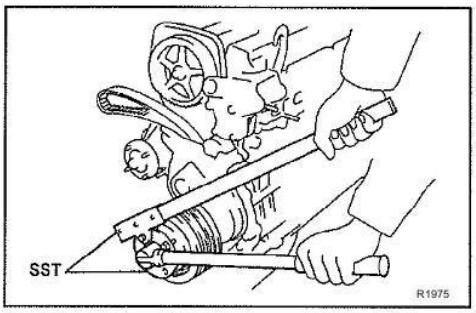
- If water or oil is found to be attached to the timing belt or any pulley, repair the leakage or intrusion and replace with a new timing belt.
- Before installing each pulley, be sure to wipe off any dirt with a rag. (Do not wash)
- Be sure to remove spark plugs from all cylinders before installing the timing belt.
- Do not retighten the timing belt. If reuse is unavoidable, follow the steps below and carry out the work when it is cold.

1 Installing the timing belt

(1) Check the rotation direction of the timing belt, and attach the timing belt to the crankshaft timing pulley, oil pump drive pulley, and timing belt idlers No1 and Na2.

(2) Assemble the timing belt guide so that the collar side faces toward the front of the engine.





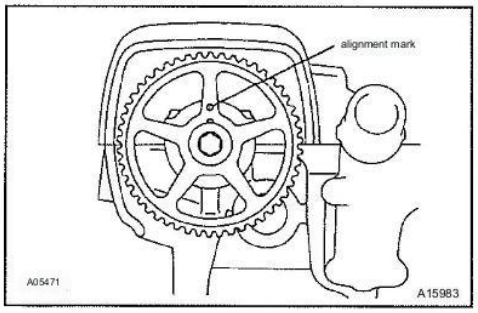
(3) Install timing belt cover No.1.

(4) Insert the crankshaft pulley into the crankshaft, and Install the reel set bolt.

(5) Use SST to secure the crankshaft pulley and tighten the crank. Tighten the shaft pulley set bolt to the specified torque.

SST 09213-54015 09330-00021 90119-08216

(6) Align the notch on the crankshaft booley with the 0° mark on timing belt cover No.1.



(7) Camshaft timing pulley hole and camshaft bearing

Make sure that the alignment marks on the cap are aligned.

(8) Remove timing belt cover No.4.

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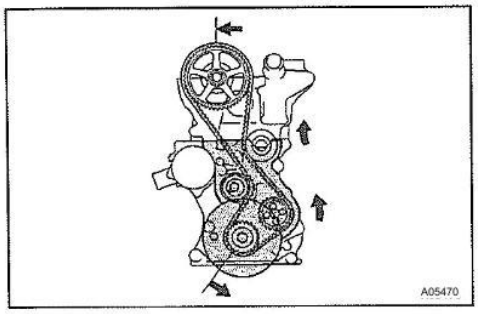
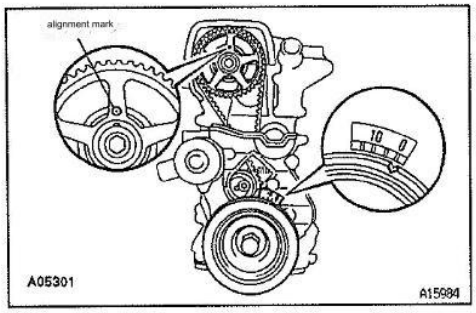


(9) Install the timing belt, keeping tension between the crankshaft timing pulley, oil pump drive pulley, timing belt idler No. 2, and camshaft timing pulley.
Make sure
注意 each alignment mark does not shift.

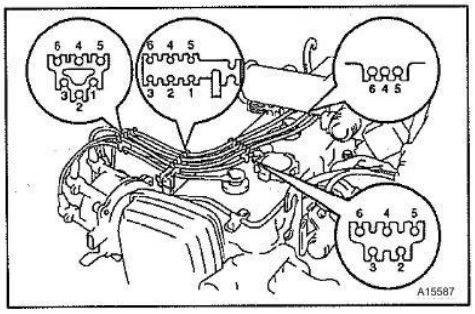
(10) Loosen the timing belt idler No. 1 bolt and apply tension to the timing belt.
Hint Once timing belt idler No. 1 moves, do not loosen the bolt any further.



(11) Rotate the crankshaft twice in the forward rotation direction and check that the alignment marks on the crankshaft timing pulley and camshaft timing pulley are aligned.
注意 Never rotate it backwards.

(12) Tighten the timing belt idler No.1 bolt
T=21.6N-m (220kgf-cm)

(13) Install timing belt cover No.4.



2 Installing the resistive cord
Attach the resistive cord as shown in the diagram.

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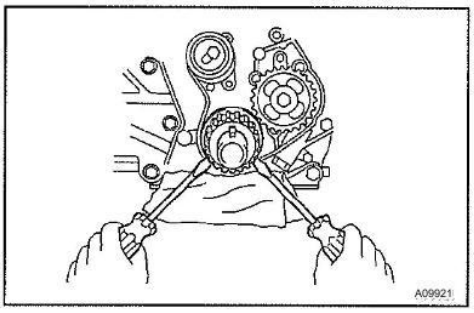
1

crankshaft front oil seal

Points to note during attachment/detachment work

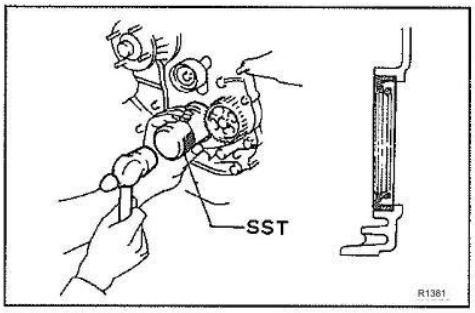
1 Removal and installation
of the timing belt (see "Engine body" - "Timing belt")



2 Removing the crankshaft timing pulley
Remove the timing pulley by hand.
<Reference> If you cannot remove it by hand, use two screwdrivers to remove it using a cloth.

3 Crankshaft front oil seal replacement
(1) Cut the lip part with a utility knife.
(2) ⊖ Wrap vinyl tape around the screwdriver and pry off the oil seal.

CAUTION After removing the oil seal, check that there are no scratches on the crankshaft. If there are any scratches, fix them with sandpaper (#400).



(3) Apply a small amount of MP Grease No. 2 to the lip of the new oil seal.
(4) Using SST, drive the oil seal until it touches the front of the oil pump housing.
SST 09635-20010 or 09223-00010

HINT - Do not drive the oil seal diagonally.
Wipe off the grease adhering to the crankshaft.

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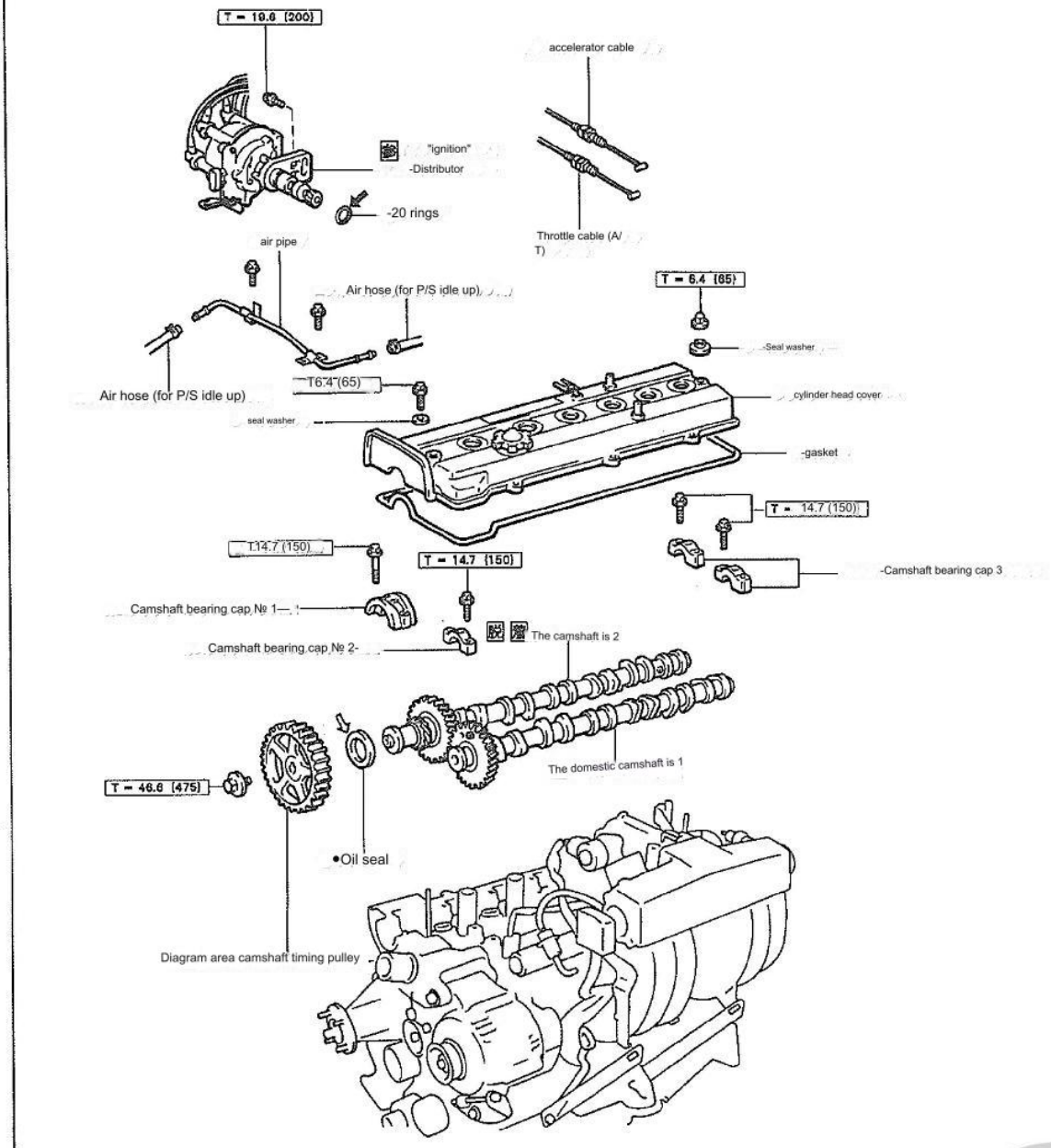
YG049597

cylinder head gasket

Detachment configuration diagram

1

1/2



A15560

⇐ .....MP Grease application picture...Refer to

⇐··· ...Applying engine oil •.....Non-reusable parts ▭··· torque [N· m {kgf.cm}]

misco...Tightening

A18059

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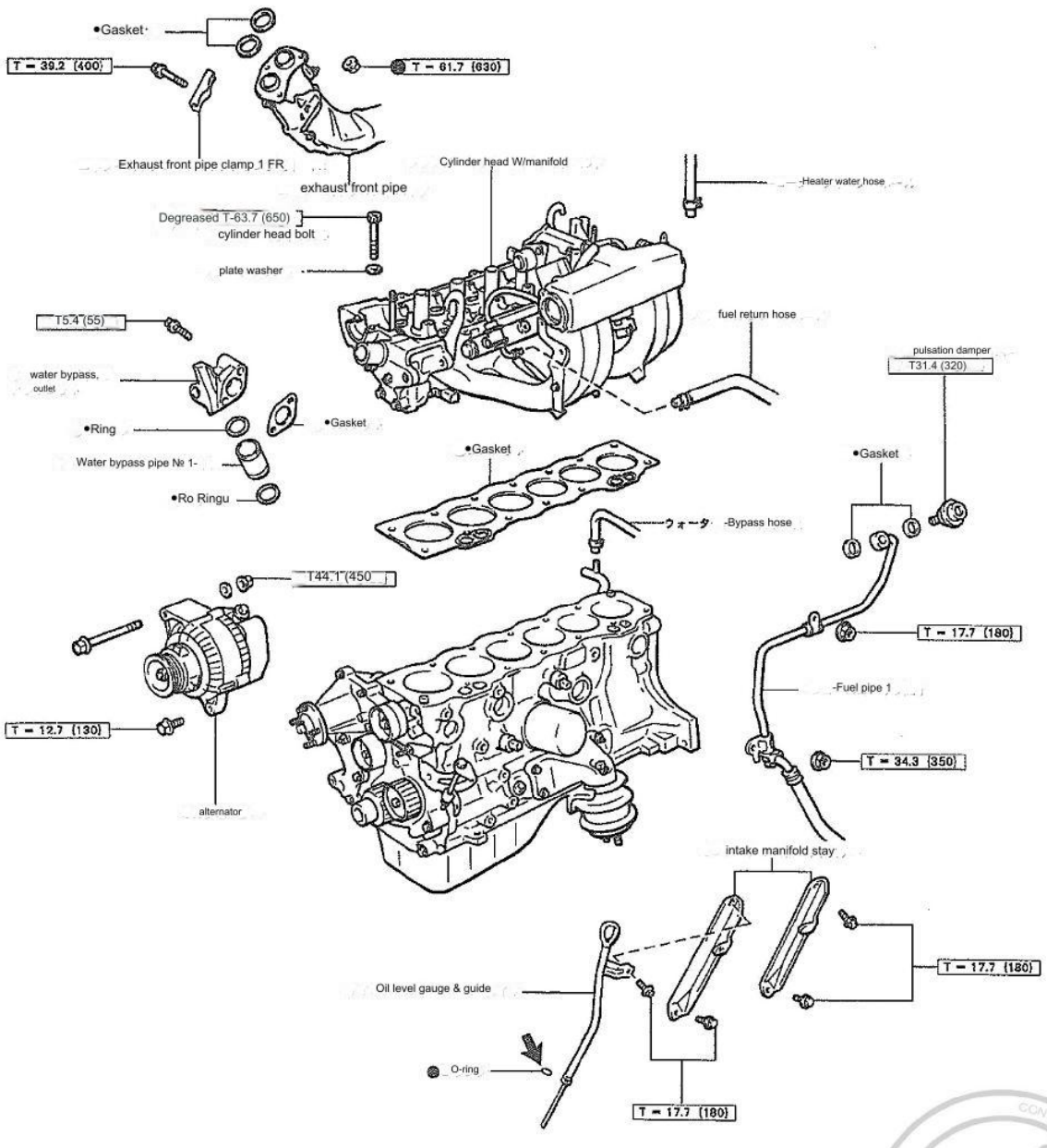
1

2/2



⇐ ·····Applying engine oil •.....Non-reusable parts ☐ ...Tightening torque [N· m {kgf· cm)]

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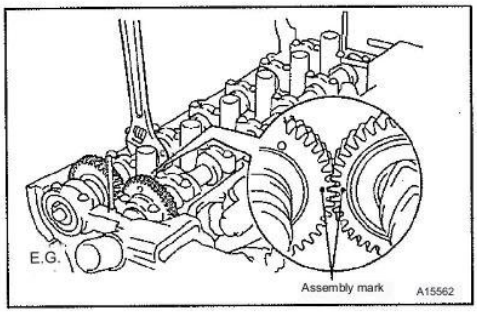
Cylinder head gasket removal

1 Fuel spill prevention work
(Refer to [Engine control system] "Fuel spill prevention work")

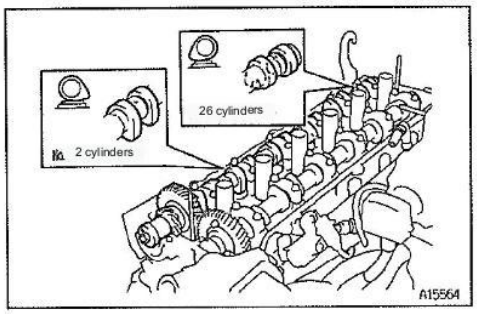
2 Timing belt removal
(Refer to "Engine body" - "Timing belt")

3 Distributor removal
(See "Ignition" and "Distributor")

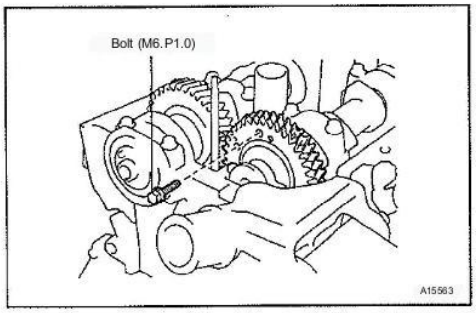
4 Removing the camshaft timing pulley
(1) Fix the camshaft using the service hexagonal part of camshaft No. 2, and remove the pulley set bolt.
(2) Remove the camshaft timing pulley.
<Reference> If the pulley is hard to fit, tap it lightly with a plastic hammer to remove it.



5 Remove camshaft No. 2
CAUTION
Since the camshaft thrust clearance is small, unless you remove the camshaft while holding it horizontally, excessive force will be applied to the thrust section and burrs will form on the thrust section of the cylinder head journal, so be sure to follow the instructions below. do the work.
(1) Rotate camshaft No. 2 using a service hexagonal part and align the assembly mark on the rear side of the cam gear.



(2) In the state of (1), connect the No. 2 and No. 6 cylinders of camshaft No. 2.
Make sure the Munoz is oriented as shown.
<Reference> For work in (1) and (2), set the lift amount of the exhaust valves of No. 2 and No. 6 cylinders to be the same, equalize the lifting force from the valve springs before and after camshaft No. 2, and then This is done to keep it horizontal.
(3) Remove camshaft bearing cap No. 2 from camshaft No. 1.



(4) Fix the sub gear to the driven gear with bolts (M6, P1.0).
Reference T-5.5Nm (55kgf.cm}
(Reference) This is done to eliminate the influence of spring force acting on the sub gear when removing the camshaft.
(5) Remove camshaft bearing cap No. 1 and oil seal from camshaft N No. 2.

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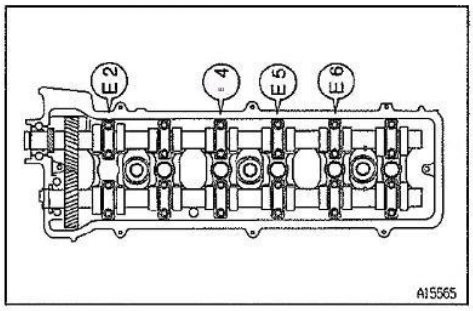


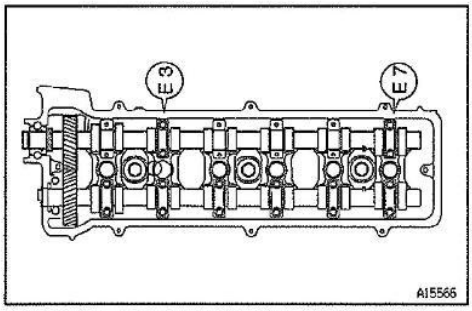
(6) Using a deep socket wrench (10mm), remove each camshaft bearing cap No. 3 in the following order.

① No. 2 journal section (engraved E2)

② No. 6 journal section (engraved E6)

③ No. 4 Journal part (engraved] E4)

④ No. 5 journal part (engraved E5)



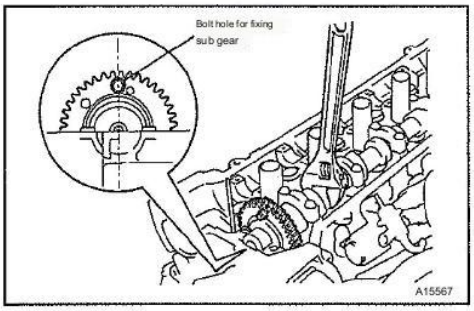
(7) Loosen the journal portions of No. 3 (marked E3) and No. 7 (marked E7) of camshaft bearing cap No. 3 evenly, and remove the bearing cap and camshaft No. 2.

- As you loosen the pairing cap bolts on the No. 3 and No. 7 journals, check that the camshaft No. 2 lifts horizontally.
- Do not apply excessive force to the camshaft by prying it with tools.
- Do not damage the thrust receiver on the cylinder head side.

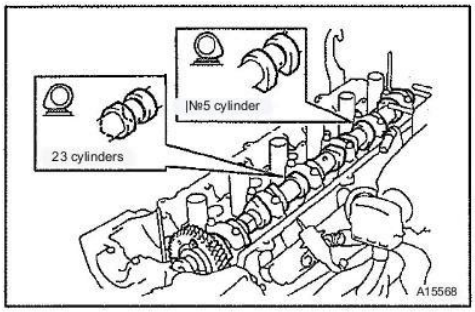
<Reference> If the camshaft does not float horizontally, install the Na3 and Na7 journal parts evenly, then lift the gear part by hand and repeat the process (7) above.

6 Camshaft No.1 removal

Since the camshaft thrust clearance is small, if you do not remove the camshaft while holding it horizontally, excessive force will be applied to the thrust section and burrs will form on the thrust section of the cylinder head journal, so be sure to follow the instructions below. of conduct.



(1) Rotate camshaft No. 1 using the service hexagonal part and Set the bolt hole for fixing the sub gear on the system shaft in the position directly above. to



(2) In the state of (1), camshaft No.1 Na 3 and 5 cylinders Make sure the Munoz is oriented as shown.

(Reference) The work in (1) and (2) is performed on the intake valves of Na3 and Na5 cylinders. The lift amount of the valve springs is the same, and the push up by the valve spring is Equalize the lifting force before and after camshaft No. 1, and then rotate the camshaft. Do this to keep it level.

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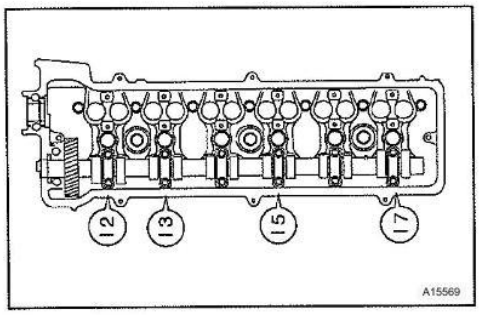


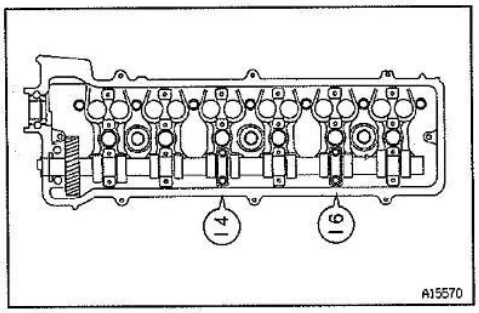
(3) Using a deep socket wrench (10mm), remove each camshaft bearing cap No. 3 in the following order.

① Na 2 journal part (engraved 12)

② No7 journal part (engraved 17)

③ Na 3 journal part (engraved 13)

④① No 5 journal part (engraved 15)

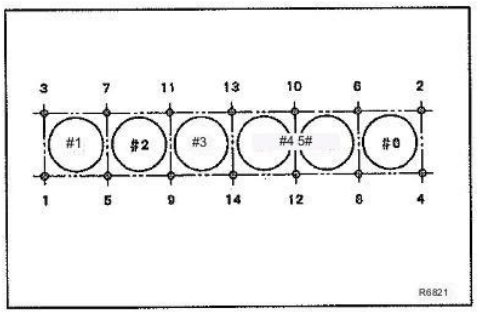


(4) Loosen the journal parts of camshaft bearing cap No. 3, No. 4 (stamped 14) and Na 6 (stamped 16) evenly, and remove the bearing cap and camshaft No. 1.

- As you loosen the bolts on the bearing caps of No. 4 and No. 6 journals, check that camshaft No. 1 lifts horizontally.
- Do not apply excessive force to the camshaft by prying it with tools.
- Do not damage the thrust receiver on the cylinder head side.

(Reference) If the camshaft does not float horizontally, install the No.4 and Na.6 journal parts evenly, then lift the gear part by hand and repeat the work in (4) above.

7 Disconnecting the wire harness - Disconnect the engine wire harness at the head side.



8 Cylinder head removal

(1) Using the socket hexagon wrench 8, loosen the cylinder head bolts evenly in several steps as shown in the figure, and remove the 14 bolts and and remove the 14 plate washers.

(2) Remove the cylinder head and gasket.

Points to note during installation work

- Differences inside the head bolt mounting holes on the top surface of the cylinder block. Completely remove assets or LLCs.

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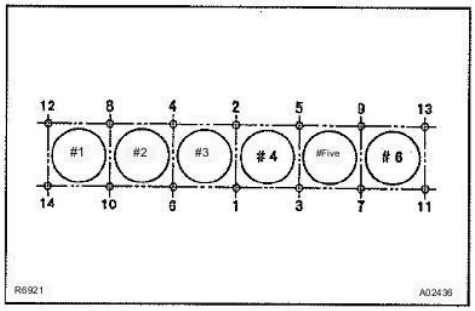


1 Cylinder head installation

Completely remove any foreign objects or LLC inside the head bolt mounting holes on the top of the cylinder head.

(1) A small amount on the threaded part of the head bolt, the seat surface, and the plate washer.

Apply engine oil. (2) Attach

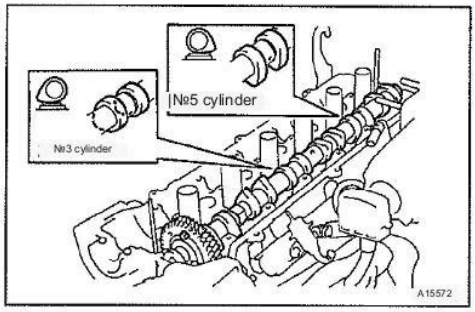
the washer to the head bolt and insert it into the cylinder head.

Enter.

(3) Using socket hexagon wrench 8, temporarily tighten the head bolt several times in the order shown in the diagram, then tighten to the specified torque.

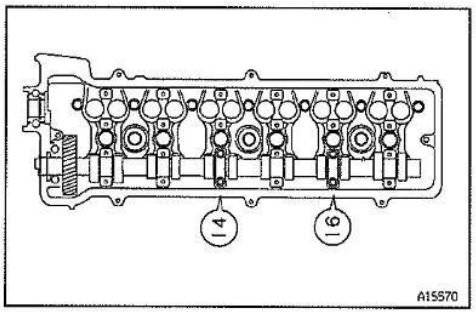
2 Camshaft No.1 installation

Since the camshaft thrust clearance is small, if you do not install the camshaft while holding it horizontally, excessive force will be applied to the thrust section and burrs will form on the thrust receiving section of the cylinder head journal, so please follow the steps below. do the work.



(1) Apply engine oil to the cam gear part of the camshaft and the journal part of the cylinder head.

(2) Set the camshaft No. 1 Na3 and No. 5 cylinder cam noses in the direction shown in the illustration, and the camshaft journal section to be located in the center of the cylinder head journal.



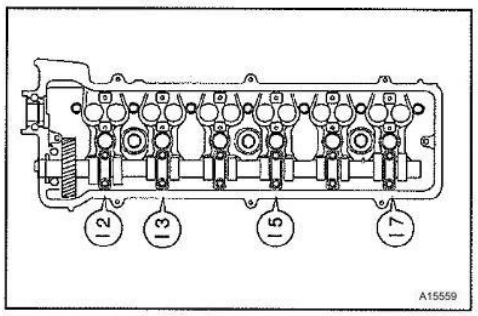
(3) Install the Na 4 and Na 6 journal parts of the camshaft bearing cap Na 3, and make sure that the pairing cap is attached to the cylinder head.

Temporarily tighten each bolt evenly until they touch.

- As you tighten the bolts, the camshaft will move horizontally and smoothly.

Let it sink into the water.

- Check that there is no jamming in the No.1 journal section.



(4) Install camshaft bearing cap No. 3, Nα. 5, Nα 3,

Temporarily tighten each bolt evenly in the order of No. 7 and No. 2 journals.

(5) Tighten each bolt evenly to the specified torque.

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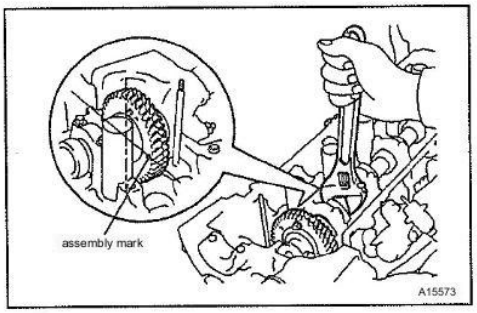
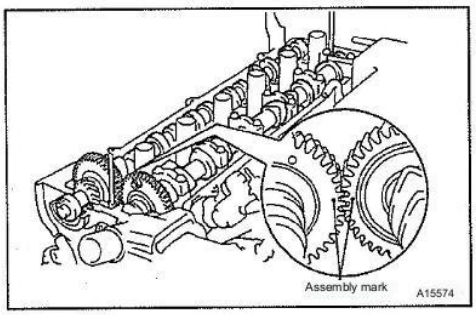


3 Camshaft No.2 installation

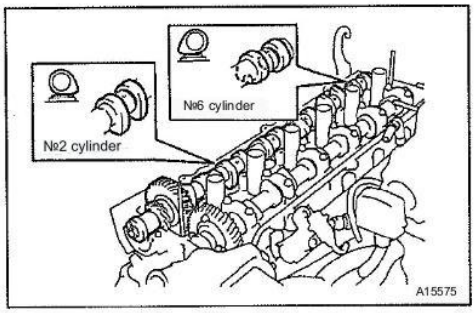
(1) Rotate camshaft No. 1 and align the assembly mark on the cam gear to the position shown in the diagram.

(2) Apply engine oil to the cam gear part of the camshaft and the journal part of the cylinder head.

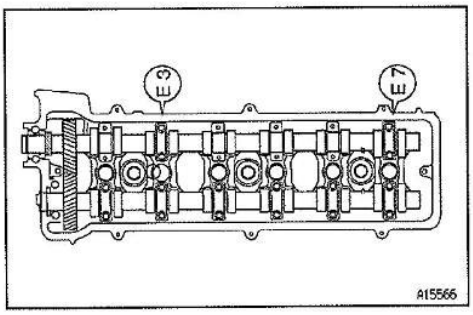


(3) Align the assembly marks on the rear of the gears of camshafts No. 1 and 2, and install camshaft No. 2. CAUTION:

(Do) not damage the thrust receiver on the cylinder head side.



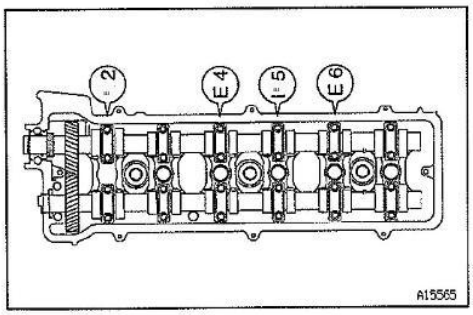
(4) Set the camshafts so that the cam noses of the No 2 and Na 6 cylinders are oriented as shown in the illustration, and the journal part of the camshaft is located in the center of the cylinder head journal.



(5) Install the Na 3 and N No. 7 journal parts of the camshaft bearing cap Na 3, and temporarily tighten each bolt evenly until the mating surface of the bearing cap touches the cylinder

(注意) head.· As you tighten the bolts, let the camshaft sink horizontally and smoothly.·

Check that there is no jamming in the No.1 journal section.



(6) Install camshaft bearing cap No. 3, and temporarily tighten each bolt evenly in the order of No. 5, Nα 4, No. 6, and No. 2 journal.

(7) Tighten each bolt evenly to the specified torque.

(8) Apply a small amount of MP grease No. 2 to the lip of the new oil seal. cloth, and insert it into the camshaft from the lip side.

(注意) • Do not invert the lip.

· Insert the cylinder head securely to the deepest part.

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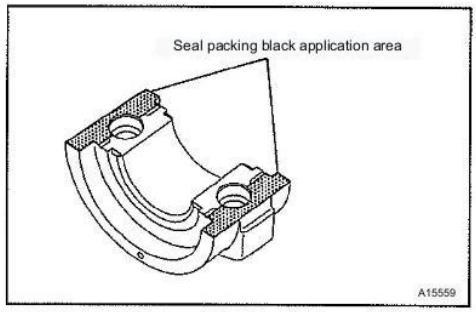


(9) Degrease the mounting surface of camshaft bearing cap No. 1 (camshaft No. 2 side).

(10) Apply seal packing black to the location shown in the diagram on the bearing cap, and install it to the cylinder head within 5 minutes.

NOTE
- Make sure there is no gap between the mating surfaces of camshaft bearing cap No. 1 and cylinder head.
- If the camshaft bearing cap No. 1 and cylinder head collar are difficult to engage, press the bearing cap by hand. Do not drive the bearing cap in with a hammer, etc.
- After assembly, do not start the engine and leave it for up to 2 hours.

(11) Tighten the bolts evenly.

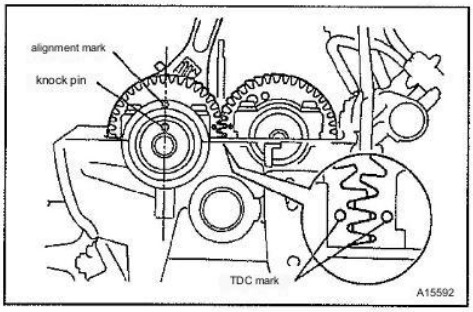
(12) Remove the sub gear fixing bolt on camshaft No.1.

(13) Install camshaft bearing cap No. 2 of camshaft No. 1 to the cylinder head.

NOTE
- Check that there is no gap between the mating surfaces of camshaft bearing cap No. 1 and cylinder head.
- If the camshaft bearing cap No. 1 and cylinder head collar are difficult to engage, press the bearing cap by hand. Do not drive the pairing cap in with a hammer, etc.

(14) Tighten the bolts evenly.

(15) When aligning the dowel pin of camshaft Na 2 with the alignment mark of camshaft bearing cap No. 1, confirm that the TDC marks of camshaft No. 1 and No. 2 match.



4 Installing the camshaft timing pulley

(1) Secure the camshaft using the camshaft service hexagon. and install the pulley set bolt.

5 Installing the distributor

(See "Ignition" and "Distributor")

6 Timing belt installation

(See “Engine body” and “Timing belt”)

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T0042508

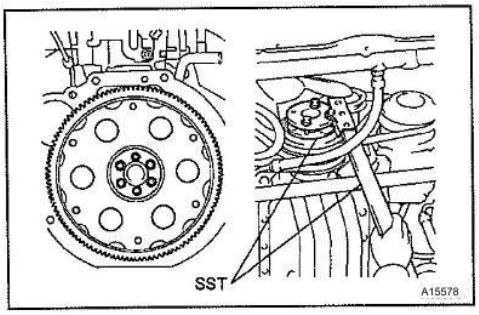
engine rear oil seal

Points to note during attachment/detachment work

1

1 Automatic transmission removal and removal (A/T vehicles) (see “Automatic Transmission” and “Transmission ASSY”)

2 Manual transmission and clutch removal (M/T vehicle)
(See "clutch" and "clutch ASSY")



3 Attaching and removing the flywheel or drive plate
・ The flywheel or drive plate set bolt is
Use SST to hold and remove the crankshaft.

S S T 09213-54015 09330-00021 90119-08216

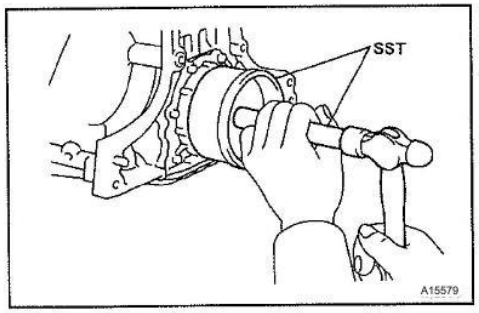
T=73.5N•m {750kgf•cm}

4 Engine rear oil seal replacement

(1) Cut the lip part with a utility knife.

(2) ⊖ Wrap vinyl tape around the driver and pry the oil seal off by applying a rag to the crankshaft.

Note After removing the oil seal, check that there are no scratches on the crankshaft chamfer. If there are any scratches, fix them with sandpaper (#400).



(3) Apply a small amount of MP Grease No. 2 to the lip of the new oil seal.

(4) Use SST to drive the oil seal to the end face of the retainer.

SST 09223-15020 09951-07150

Grease ・ Wipe off the grease adhering to the crankshaft.
・ Do not drive the oil seal diagonally.

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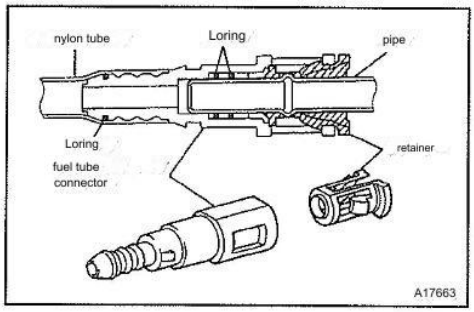
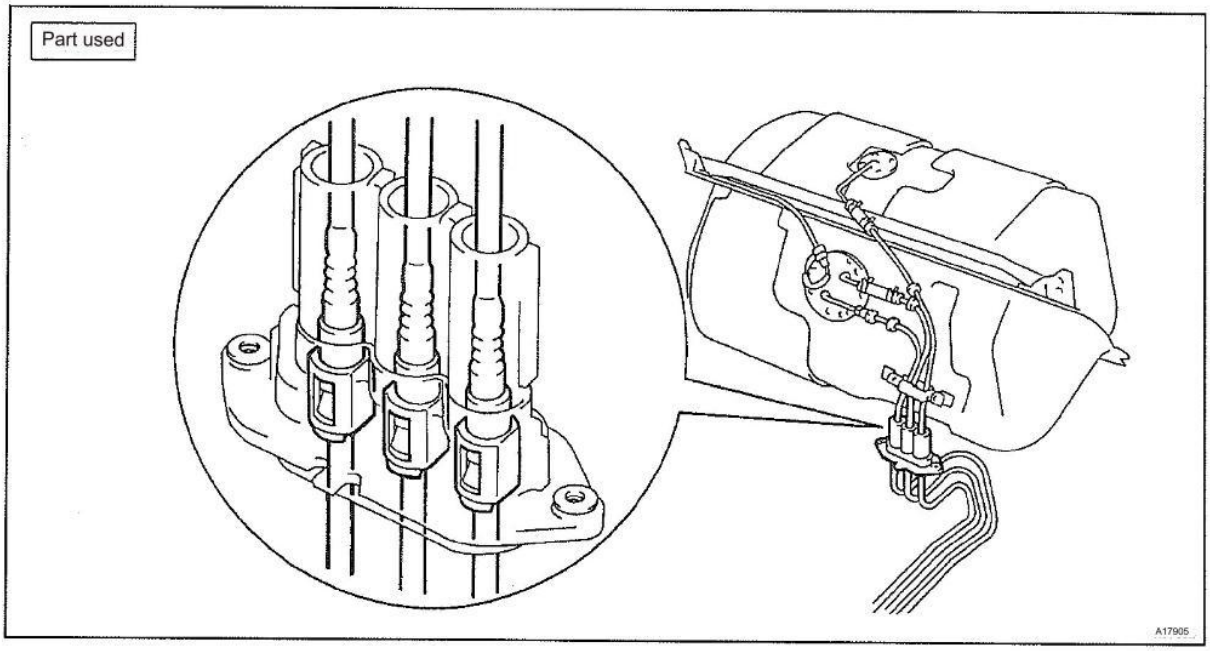


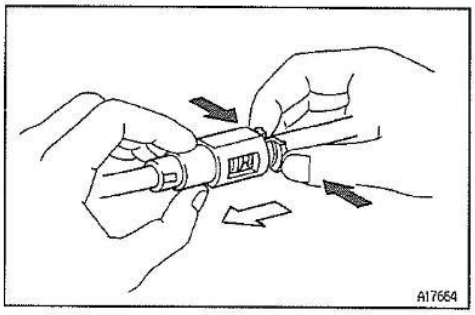
T0048600

fuel

Precautions when attaching and detaching the quick connector

- Since the quick connector uses an O-ring to seal the vibrator and the connector, be very careful when working to avoid damaging the adhesive part or adhering foreign matter.
- Always perform attachment/detachment work by hand and do not use tools.
- Do not forcefully bend, fold or rotate the nylon tube.
- Do not reuse the retainer that has been removed from the pipe side.





1 Quick connector disconnection

(1) Clean any foreign matter such as mud stuck to the pipe before starting work.

(2) Pinch the tip of the retainer with your fingers and pull out the connector to disconnect it.

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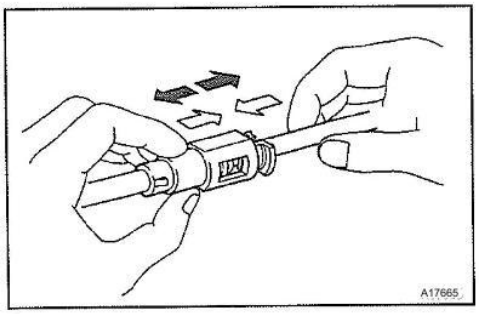
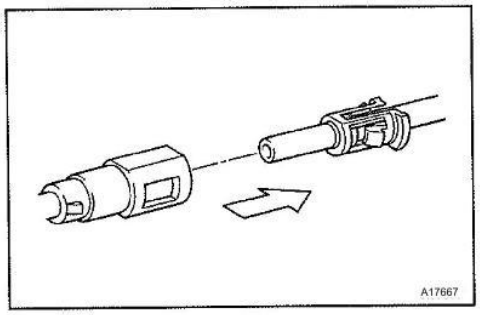


(3) If the connector and pipe are stuck, push or pull them by hand to release them. Don't pull too hard.

(4) Do not remove the retainer remaining on the pipe side except when replacing related parts.

(Reference) Do not remove the retainer when reassembling.

(5) After cutting, protect the adhesive part with a plastic bag.



2 Quick connector connection

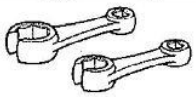
(1) Before starting work, check that there are no scratches or foreign objects on the pipes and connector connections.

(2) Align the pipe and connector axes and insert the retainer until it clicks.

(3) Pull the connector and pipe to confirm that they are securely assembled.

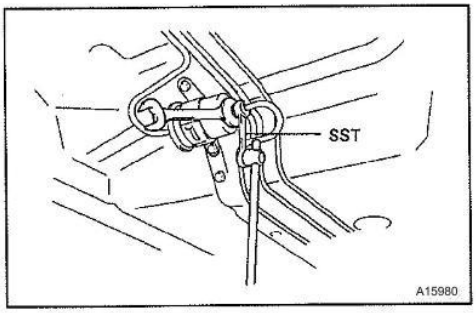
YC049001

Preparation items

	09631-22020	power steering hose nut wrench set	Fuel tube removal and removal

T0049243

fuel filter



Points to note during attachment/detachment work

1 Fuel main tube and fuel main tube

No. 2 Detachment

- The main tube and main tube Na2 are attached and detached using SST.

SST 09631-22020

T=36.5Nm {372kgf· cm} (specified tightening torque)

T' 29.2Nm (298kgf· cm} (when using torque wrench 460F)

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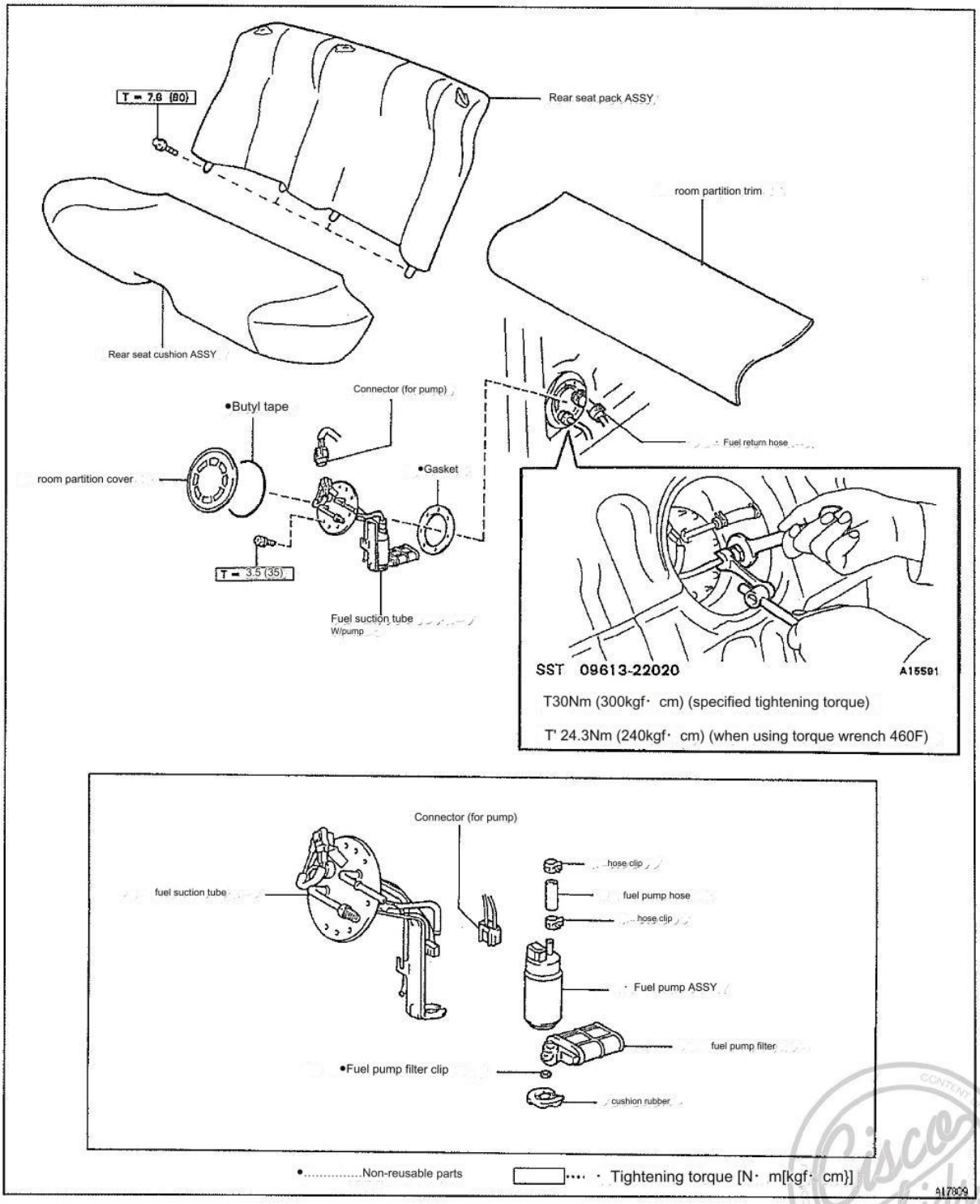
T0049344

fuel pump

Detachment and disassembly configuration diagram



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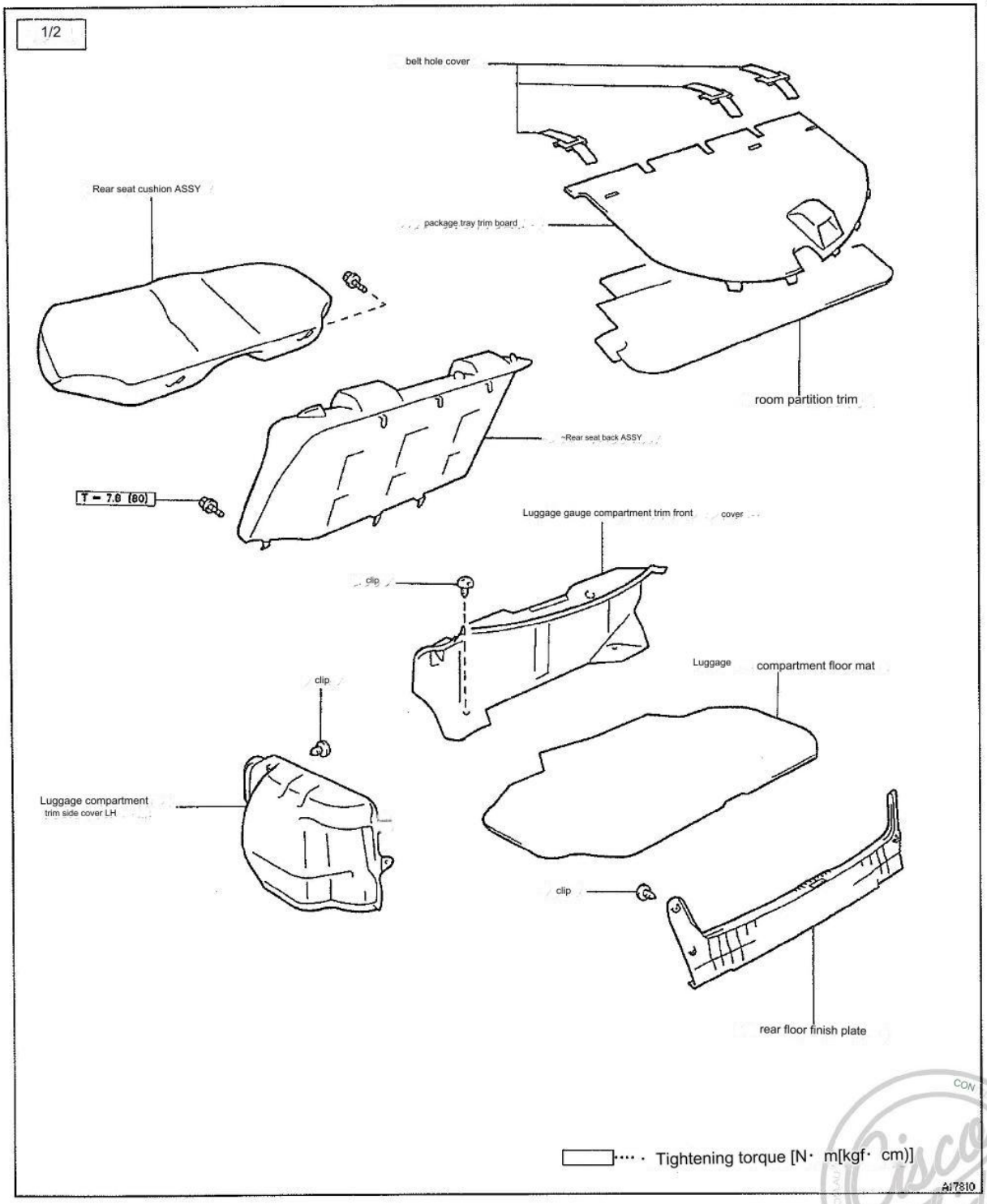
10049845

fuel tank

Detachment configuration diagram

1



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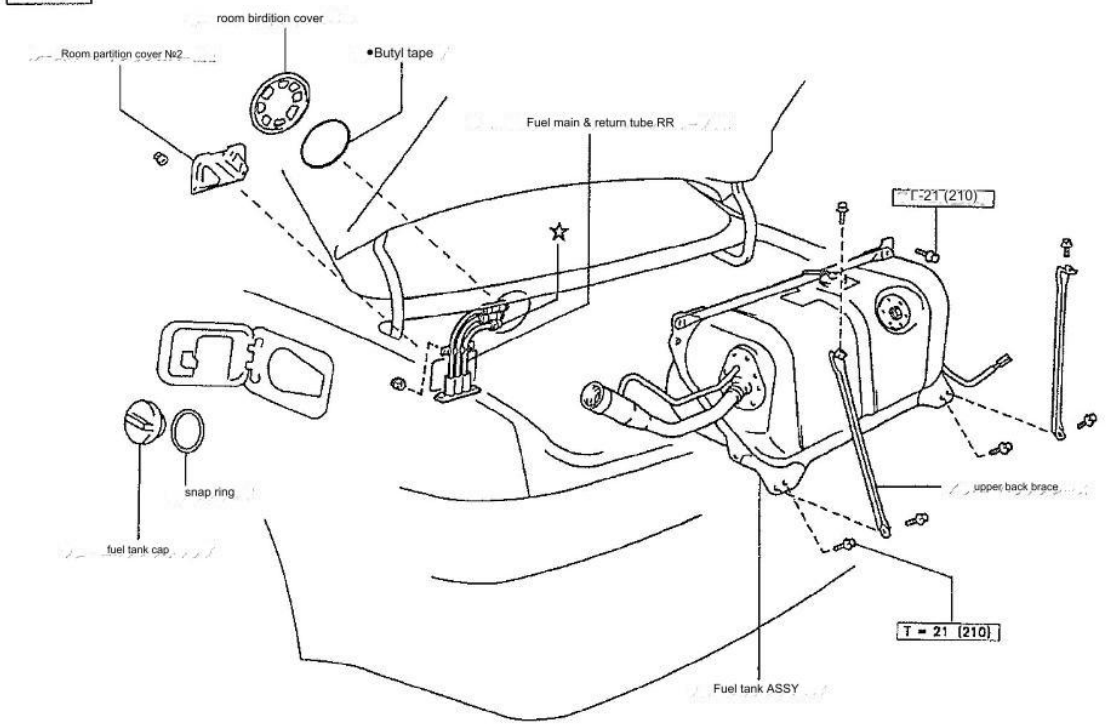
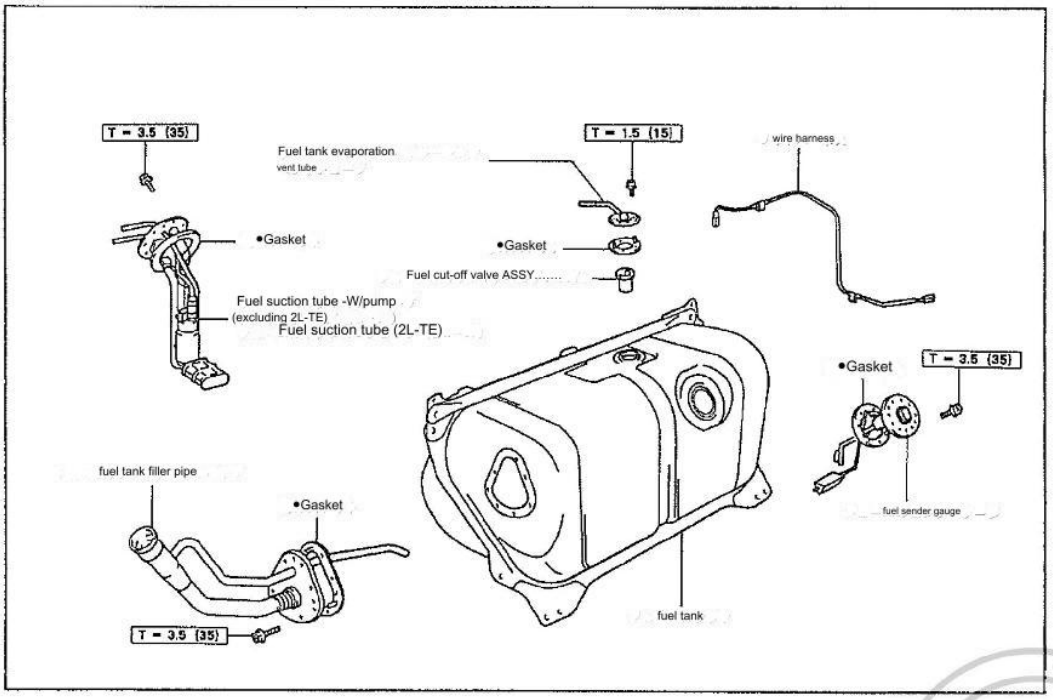
1

2/2





☆·····Refer to torque text •.....Non-reusable parts ▭.....Tightening torque [N·m{kgf·cm}]

A17611

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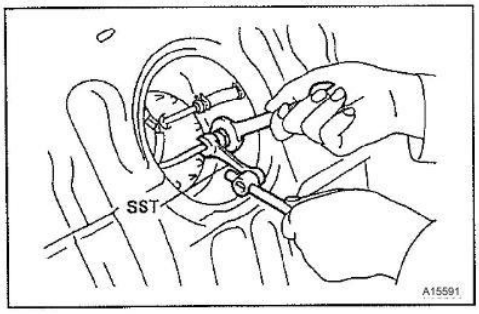

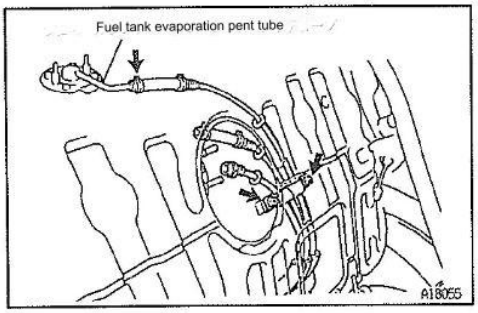

Points to note during attachment/detachment work

1 Fuel suction tube installation/

removal · Fix the fuel main & return tube RR with a spanner and use SST to install/remove the fuel suction tube.

SST 09631-22020

T-30N· m {300kgf· cm} (Specified tightening torque)

T' =24.3Nm (240kgf· cm) (When using torque wrench 460F)

2 Attaching and detaching the fuel tank evaporation vent hose and fuel suction tube clamp (1) Attach and detach the hose and clamp at the positions shown in the diagram.

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T0C4906S

Lubrication

1

Preparation items

S S T

	09228-07501	oil filter wrench	Oil filter removal
	09816-30010	Oil pressure switch socket	Oil pressure switch removal and removal

tool

	09032-00100	oil pan seal cutter	For oil pan removal
Deep socket wrench (14mm)		10203	Exhaust front pipe removal and removal

instrument

	OPG-210 ATG-100	Automatic transmission oil pressure gauge set Available from Banzai Co., Ltd. Available from Iyasaka Co., Ltd.	For oil pressure measurement
	(OPG-230) (ATG-OP20)	Adapter D Treated as Banzai Co., Ltd. Treated as Iyasaka Co., Ltd.	For oil pressure measurement

Oils and fats/others

Adhesive 1324	50401	For oil pressure switch application
Toyota genuine engine oil	32103	For supplementary light
Seal packing black	50902	For oil pan installation
rope or wire	52014	For hanging each part
piece of wood	53601	Engine W/Mission holding
saucer	53001	oil receiver

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T0049606

Functional check

oil pressure check

1

Reference value

engine rotation	Oil pressure [kPa {kgf/cmf}]
At idle rotation	49 (0.5) or more
Hold at 5600r/min	314~441 (3.2~4.5)

Main points

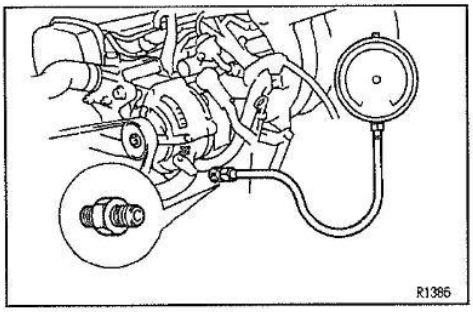
1 Engine oil check

2 Removal of oil pan protector (cold region specification vehicles) and engine under cover

3 Intake manifold stay (front side) removal

4 Removing the oil pressure switch

S S T 09816-30010



5 Installing the oil pressure gauge

(1) Attach the oil pressure gauge via the adapter.

6 Engine warm-up

7 Oil pressure measurement

8 Oil pressure gauge removal

9 Oil pressure switch installation

(1) Degrease the oil pressure switch and cylinder block threads.

(2) Apply Adhesive 1324 to the threaded part of the oil pressure switch.

SST 09816-30010

T=14.7Nm (150kgf.cm)

After installation, do not start the engine for one hour.

(3) Connect the connector.

10 Intake manifold stay (front side) installation

11 Installing the engine under cover and oil pan protector (cold region specification vehicles)

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T0040007

oil filter & Union

Points to note during attachment/detachment work

After filling the engine with oil, be sure to check for oil leaks.

1 Oil filter removal and removal

(1) Remove the oil filter using SST. SST

09228-07501

(2) Remove dirt and foreign objects from the mounting surface on the engine side.

(3) Apply a small amount of engine oil to the O-ring of the new oil filter.

(4) ○Install by hand until the ring touches the mounting surface.

(5) ○After the ring touches the mounting surface, tighten it an additional 3/4 turn SST.

SST 09228-07501

2 Attaching and

detaching the union - Attach and detach the union using a socket wrench (22mm). T-29.4Nm (300kgf.cm)

T0040028

oil pump

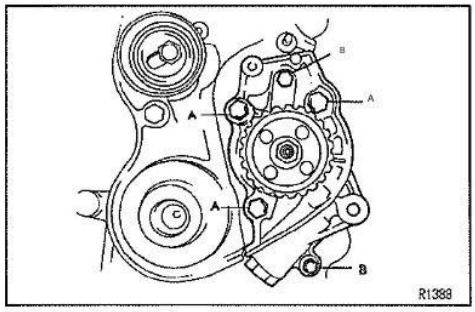
Points to note during attachment/detachment work

1 Timing belt removal and removal

(Refer to "Engine body" - "Timing belt")

2 A/C compressor removal

(1) Remove the A/C compressor with its low and high pressure hose and hang it up with wire.



3 Oil pump installation

(1) Apply engine oil to a new O-ring and install it to the timing belt case.

(2) Install the oil pump with 5 bolts.

T=18.1Nm (185kgf· cm} (Bolt A)

T=8.8N-m (90kgf· cm) (Bolt B)

4 A/C compressor bracket installation

T-46.6N.m (475kgf.cm)

5 A/C compressor installation

T=24.5N•m {250kgf•cm}

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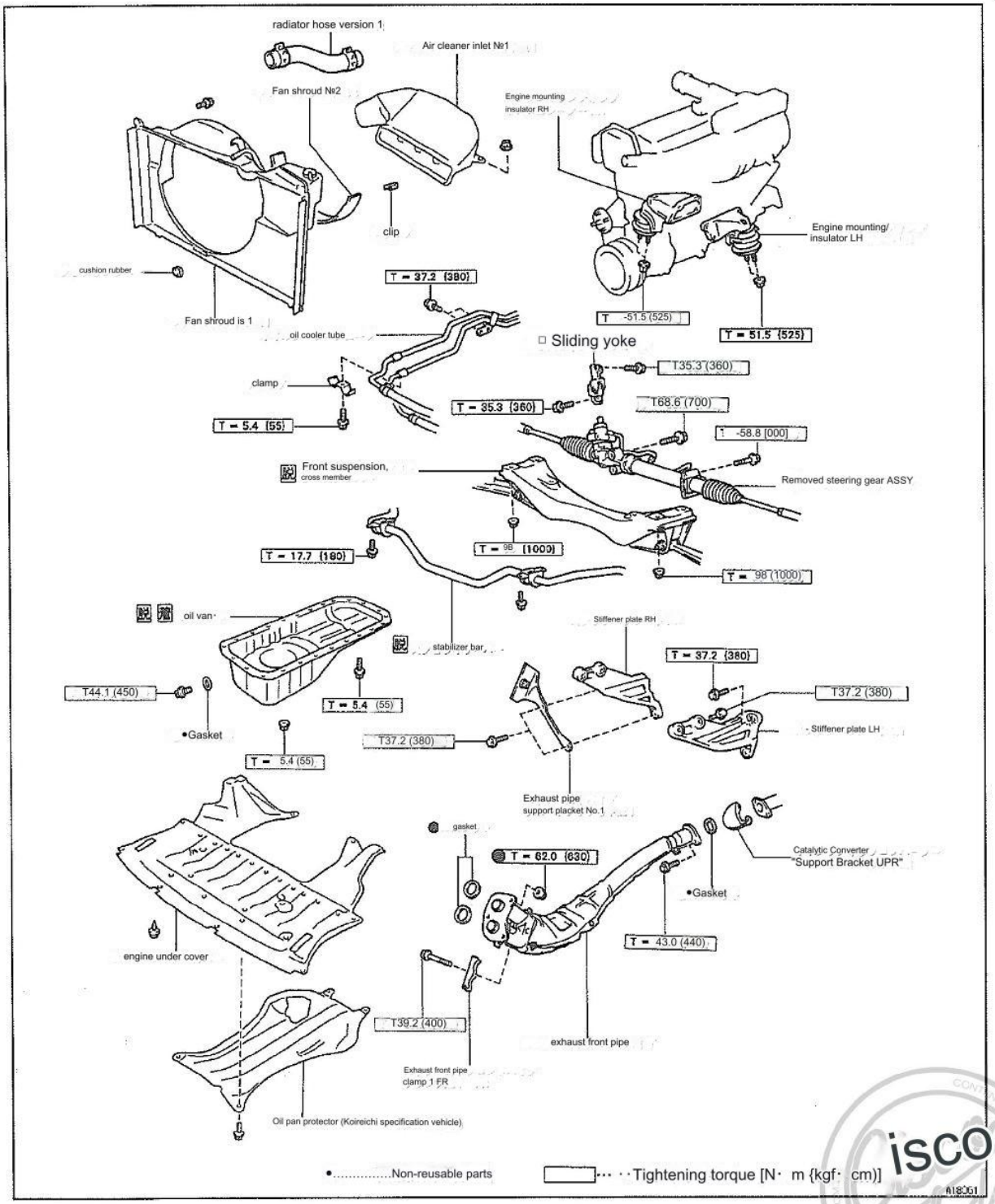
Oil pan

Detachment configuration diagram



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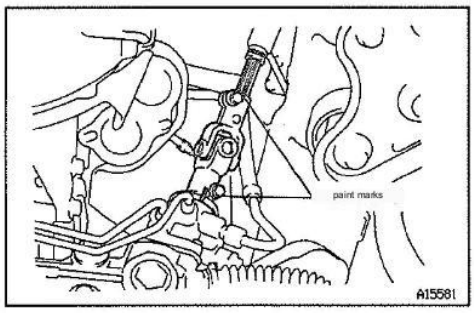
Points to note during attachment/detachment work

1 Remove the stabilizer bar

· Remove the stabilizer bar from the bracket and hang it with wire, etc.

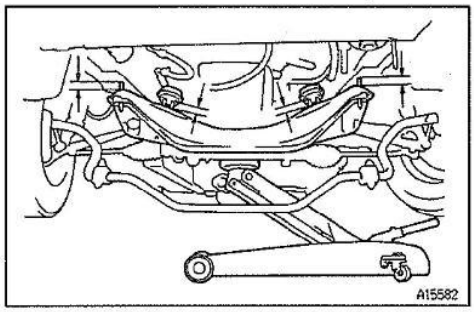


2 Steering gear ASSY removal

· Attach a paint mark to the sliding yoke before removing it.

· After removing the steering gear ASSY from the front suspension cross member, suspend it with wire, etc.

NOTICE Make sure that no load is applied to pressure feed hoses, return hoses, tie rods, etc.



3 Front suspension cross member separation

(1) Support the clutch housing of the transmission with a jack using a piece of wood, etc.

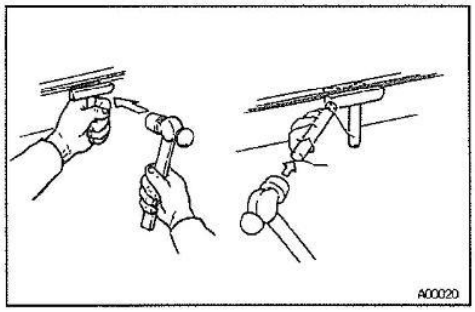
(2) Remove the four nuts on the front suspension cross member side of the engine mounting insulators RH and LH.

(3) Operate the jack to push up the engine W/ transmission.

NOTICE - Operate the jack slowly.

- Maintain left and right balance.

<Reference> Perform this to ensure the clearance necessary for installing and removing the oil pan.



(4) Support the front suspension cross member with a jack. (

(5) Remove the 4 nuts, lower the jack, and lower the front suspension.

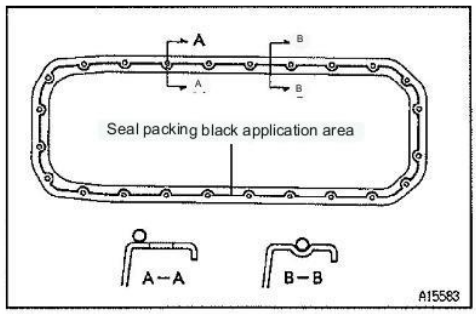
lower the cross member and separate it from the body.

4 Removing the oil pan

· Remove the oil pan using an oil pan seal cutter and brass bar.

NOTICE - Perform slowly to avoid deforming the oil pan flange.

· Do not drive into the timing gear case.



5 Installing the oil pan

· Apply seal packing black in a continuous bead (3~5mm) to the position shown in the diagram and install.

NOTICE · Assemble within 5 minutes after applying the seal packing.

· Do not inject engine oil within 2 hours after installation.

place

6 Front wheel alignment inspection

("Suspension & Axle" "Wheel Alignment"

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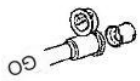
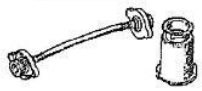
TO049610

cooling

Preparation items

instrument

	RCT-2A RCT-2	Radiator cap tester handled by Banzai Co., Ltd. Treated as Iyasaka Co., Ltd.	For water leak inspection
	RCT-2A-30S RCT-2-AST	radiator cap tester Adapter set A handled by Banzai Co., Ltd. Treated as Iyasaka Co., Ltd.	For checking water leaks
thermometer	21701		For checking water temperature

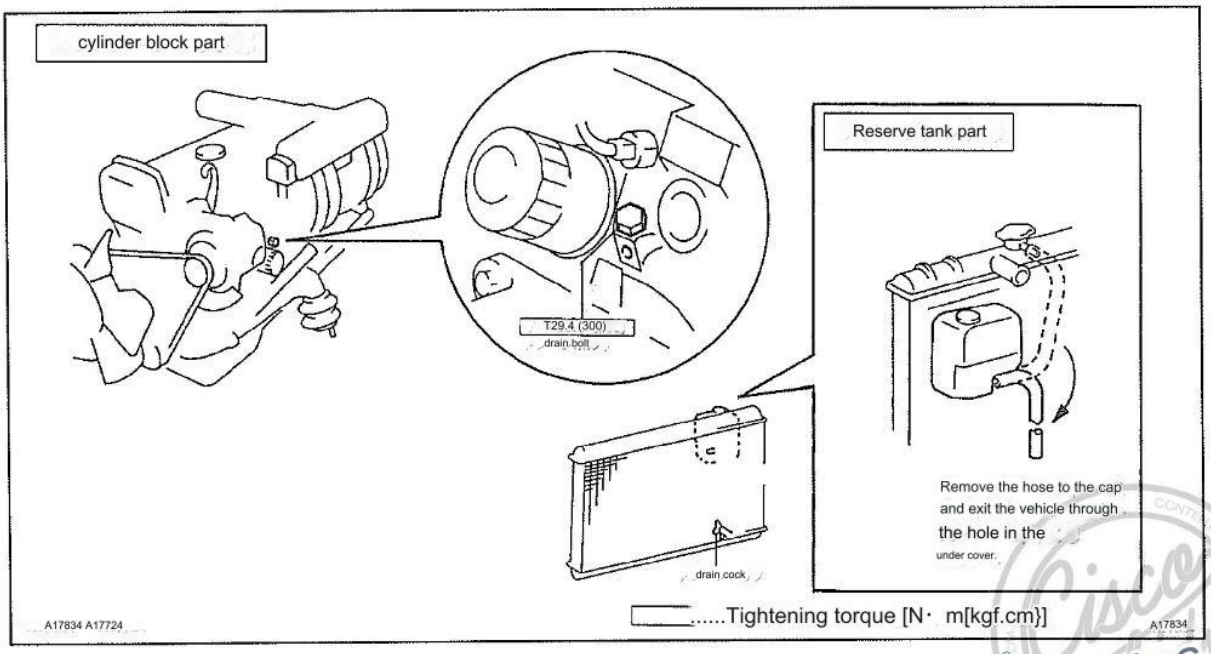
Oils and fats/others

Toyota genuine long life coolant	32001	
rope or wire	52014	P/S pump for hanging

TO049615

Cooling water exchange

Cooling water drain point



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T0048511

Functional check

Cooling system leak check

1

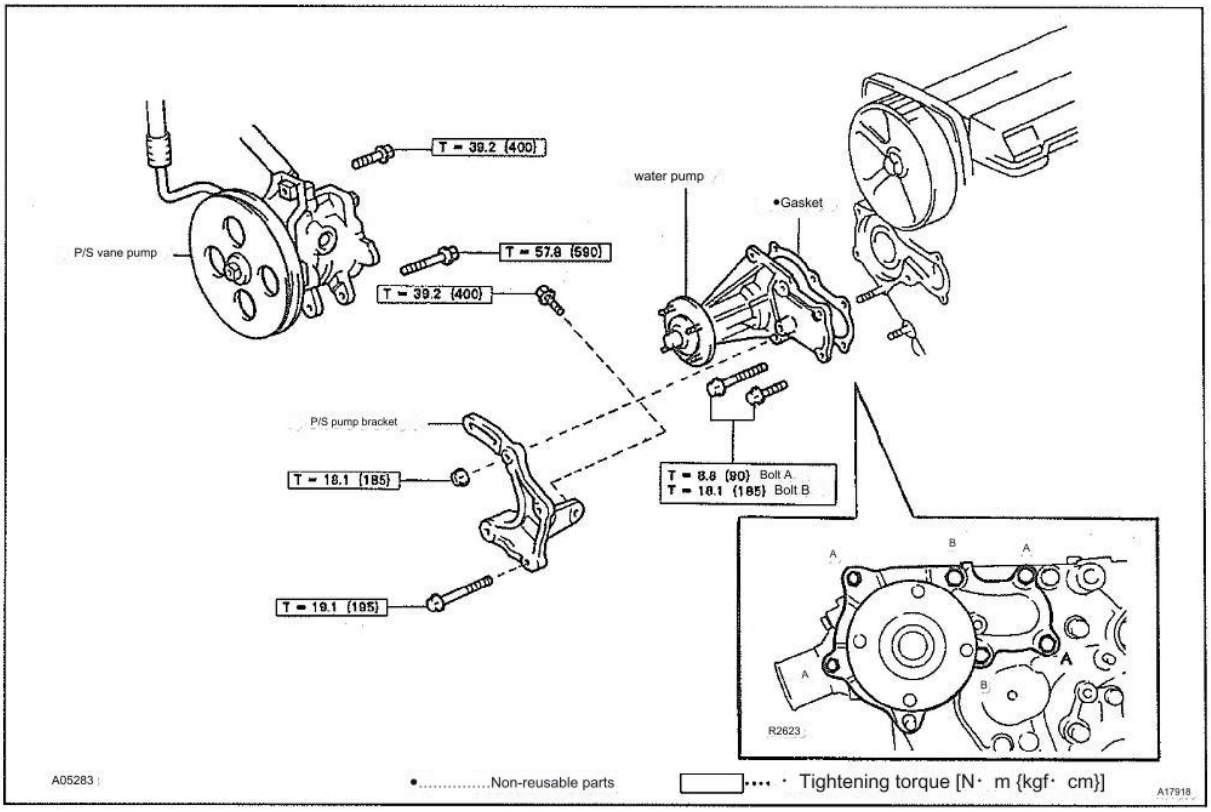
(1) Fill with cooling water and attach the tester.

(2) Apply a pressure of 118kPa (1.2kgf/cm²) and check that there are no water leaks in each part.

T0040012

water pump

Detachment configuration diagram



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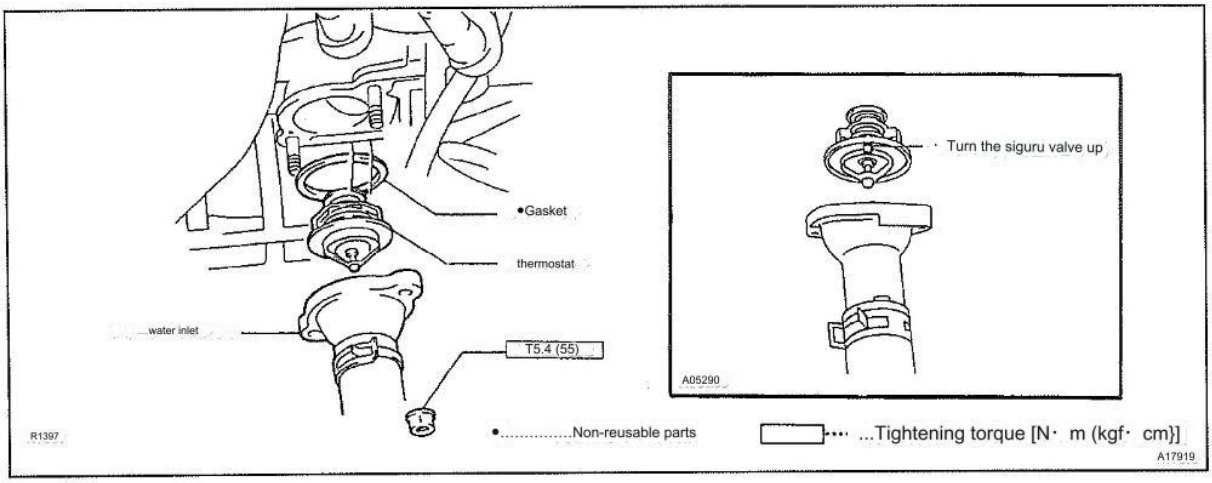
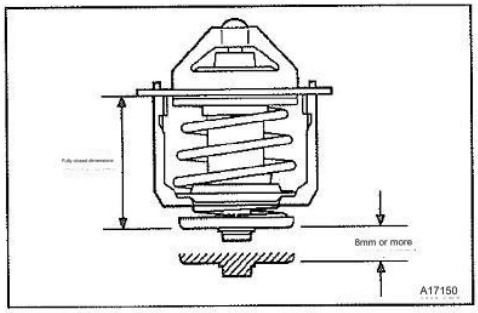
T0049813

thermostat

Detachment configuration diagram



T0049514



Individual inspection

thermostat

1 Operation check

(1) Immerse the thermostat in water and gradually heat it up.

(2) Use a thermometer to measure the temperature at which the valve begins to open and when it fully opens.

Standard value Temperature at start of opening 80~84°C

Temperature at full opening 94°C

(3) サ — Pull up the mostat and quickly measure the fully open dimensions.

Standard value 8mm or more

Measure the fully closed dimensions before heating.

<Reference> The fully open dimension is measured by the amount of movement of the bottom bypass valve.

radiator cap

1 Valve opening pressure check

(1) Use a tester to pressurize the radiator cap and check the valve opening pressure.

When attaching the cap to the tester, apply water to the seal of the cap.

Standard value 74~103kPa (0.75~1.05kgf/cm²)

Limit 59kPa (0.6kgf/cm²)

(2) Confirm that the pressure is maintained in the state of (1).

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T0049618

ignition

注意 Do not remove the battery terminal while the engine is running.

1

Preparation items

instrument

	09082-00012	toyota electrical tester	For inspection of each part
	(09083-00060)	mini test lead	For inspection of each part

T0040017

Functional check

Spark check

(1) Disconnect all injector connectors.

(2) Remove only one resistive cord and spark plug.

注意 For NN№4~6 cylinders, remove the intake air connector.

(3) Attach the removed spark plug to the resistive cord and ground the spark plug's grounding electrode.

(4) Check that sparks fly when cranking. Note: Do not the engine for more than 1 to 2 seconds.

(5) Install the spark plug.

T=18.0N•m {180kgf•cm}

(6) Repeat steps (2) to (5) for other spark plugs in the same way.

(7) Connect the injector connector.

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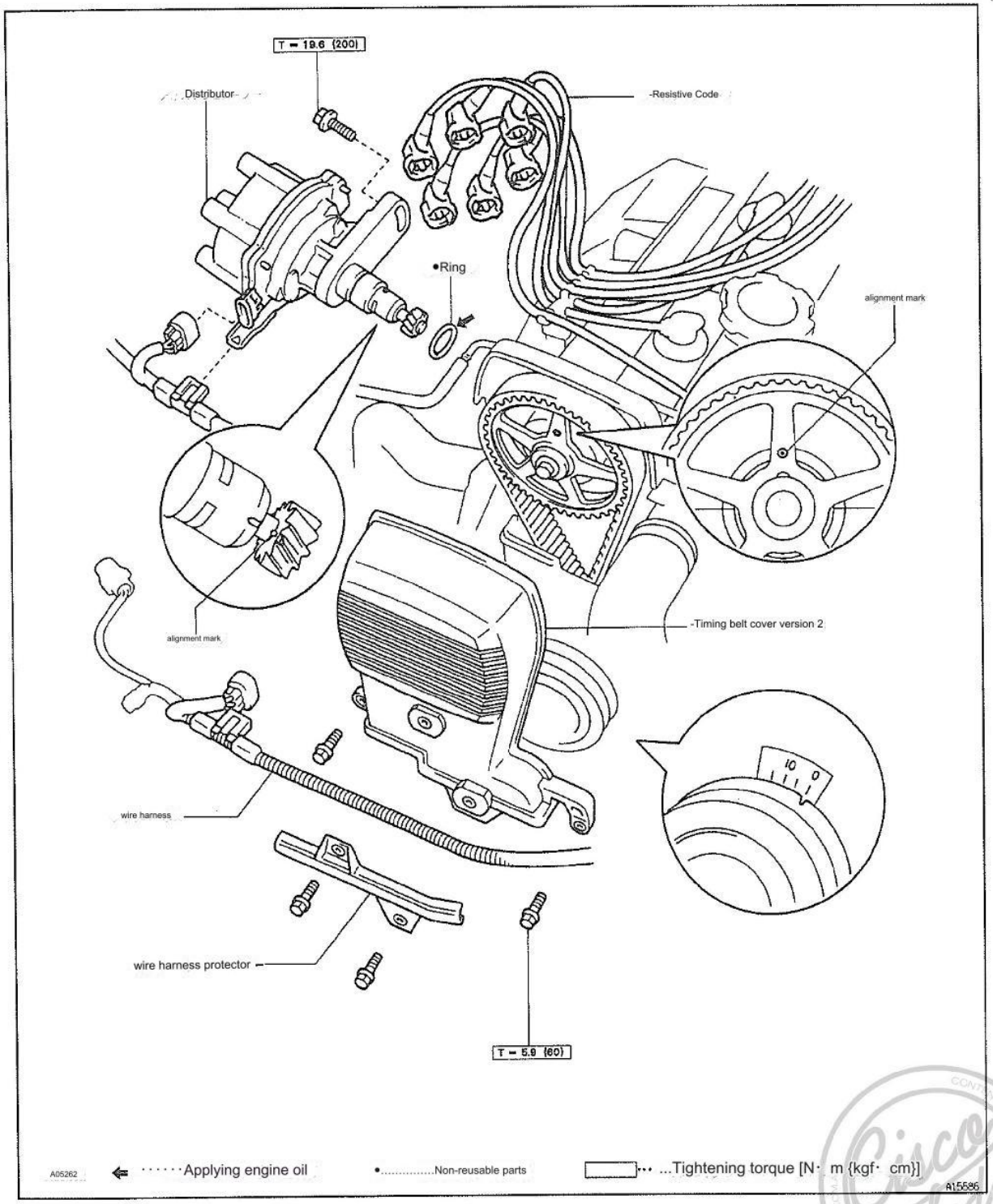
T004981B

Distributor

Detachment configuration diagram

1



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T0049816

Individual inspection

resistive code

1 Resistance check

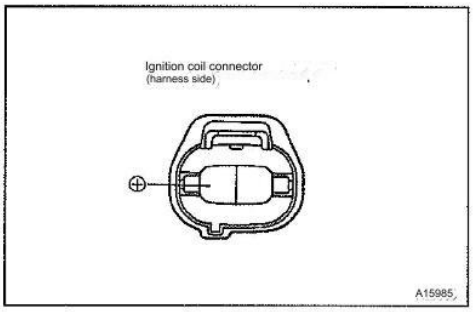
(1) Measure the resistance of the resistive cord using a Toyota electrical tester.

Standard 25k or less

Spark plug (see ``Engine adjustment" - ``Basic inspection")

ignition coil

Tip cold time and warm time during ordering refer to the temperature of the ignition coil body. Also, the temperature setting range is cold (-10~50°C) and warm (50~100°C).



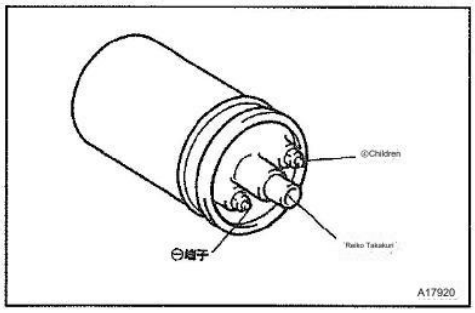
1 Input voltage check

(1) Disconnect the ignition coil connector.

(2) Turn on the ignition switch.

(3) Using a Toyota electrical tester, measure the voltage between the harness side connector terminal and ground. Standard value : 10~14V

(4) Turn off the ignition switch.



2 Resistance check

part	terminal	Measuring conditions	Reference value
primary coil	⊕↔⊖	Cold time*	0.46~0.712
		warm hours*	0.58~0.840
secondary coil	⊕→Takashima terminal	Cold time*	10.1~17.4KΩ
		Temperature time*	12.8~20.4KΩ
Insulation resistance	⊗Body earth	Always	10MΩ or more

JB3481

Distributor (Refer to "Engine Control System" - "Individual Inspection" "Distributor")

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T0049620

starting

Preparation items

1

instrument

	09082-00012	toyota electrical tester	For inspection of each part

T0048621

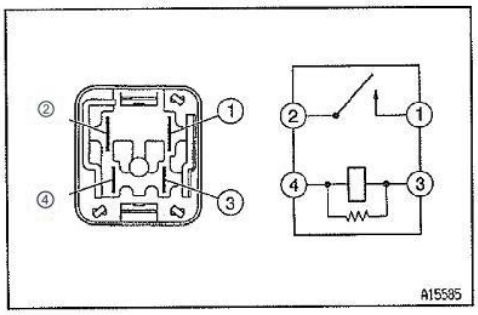
starter

Be sure to remove the battery terminal before installing or removing the starter.

Tightening torque

Tightening point	Torque [N· m[kgf.cm}]
+B terminal × terminal	9.81 (100)
starter x transmission	39 (400)

T0049622



Individual inspection

starter relay

1 Resistance and continuity check

(1) Measure the resistance between each terminal using a Toyota electrical tester.

Standard value Between 3→4 terminals 60~1000 (approx. 20°C)

Between 12 terminals 10M2 or more

(2) When applying battery voltage across terminals 34, check continuity between terminals 12 and 12.

Standard Continuity

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T0048523

charging

Preparation items

instrument

	09082-00012	toyota electrical tester	For alternator inspection

T0048524

Functional check

1 Battery specificity test Standard value 1.25~1.29 (liquid temperature 20℃)

2 Battery terminal inspection

3 Check V belt tension/deflection amount

(Refer to "Engine adjustment" - "Basic inspection")

4 Fuse check

5 Check wiring condition

6 Abnormal noise inspection

7 Function check

Inspection items	Measurement condition	Reference value
No-load test (adjusted voltage check)	Keep the engine speed at 2000r/min and keep the output current at 10A or less.	13.2~14.8V
Load test (output current check)	Apply electrical load under the above conditions. ① Headlamp ON (high beam) ② Heater blower switch ON (HI) ③ Turn on the defogger switch. If the reference value is not exceeded in ① to ③, increase the load and measure again.	30A or more

JB3483

T0045825

alternator

Tightening torque

Tightening point	Torque [N· m {kgf.cm}]
+B terminal × terminal	9.8 (100)
Alternator x fan belt adjusting bar	12.8 (130)
Alternator x water outlet	44.1 {450}

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2 JZ engine

,engine adjustment ..... 2 — 3
Supplies 23
Basic inspection 2-4
V-ribbed belt replacement 2 5
要領1 ..... 2 — 5
Auto tensioner inspection 2-5
Point 2 ..... 2 — 5
Ignition timing check ..... 2 — 5
要領3 2-5
fuel pressure check 2-6
"Procedure 2-6
2- 7 Valve clearance check/adjustment... 4
5 2 ..... 2 — 7
Valve clearance check/adjustment 9
Dashpot inspection/adjustment
(1JZ-GTE M/T car) 2-10
Dashpot inspection/adjustment 2-10
Air intake control device inspection
(1JZ-GE, 2JZ-GE) 2-10
Functional check 2-10
Unit inspection 2-10
variable intake control valve 2-10
vacuum surge tank 2-11
VSV 2-11
ENGINE CONTROL SYSTEM ..... 2 - 12
PARTS ..... 2 - 12
Parts layout 2-15
pressure regulator — ..... 2 — 18
Schematic diagram 2-18
injector 2-19
Construction diagram 2-19
Precautions for attaching/detaching 2 21
Throttle body ..... 2 — 22
exploded diagram ..... 2 — 22
Points to note when disassembling and installing 2-24
knock sensor 2- 25
Controller configuration ..... diagram 2-25
cam position sensor 2-27
Disassembled ..... diagram
2 27 Crank position sensor 2-28
disassembled diagram 2-28
Engine control computer 2-28 2
Fuel spill prevention work 28
Function check 2-29
Air-fuel ratio compensator function check 2-29
Deceleration control device (fuel cut device) 2-31
Fuel evaporative emission suppression device ..... 2 - 31
Catalyst overheat alarm device ..... 2 — 32
Fuel pump operation check and fuel leak check 2-32
troubleshooting 2-33
Diagnosis inspection/ 2-33
Diagnosis Code List 2-34
Unit inspection 2-46
fuel pump 2-46
injector ..... 2 — 46
Vacuum sensor (except 1JZ-GTE) 2-47
Airflow meter (1JZ-GTE) 2-48
throttle body 2-48
main throttle position sensor 2-49
sub throttle position sensor 2-51
throttle valve motor 2-52
Intake air temperature sensor (except 1JZ-GTE)
and water temperature sensor 253
ISCV ..... 2 — 53
Oil control valve (OCV) 2-54
Fuel pump register inspection
(excluding 1JZ- ..... GE) 2 54
Fuel pump relay (except 1JZ-GE) ..... 2 - 55
cam position sensor 2-55
crank position sensor 2-55
igniter 2-55
O2 sensor (heater) 2-55
EFI main relay
and circuit opening relay 2-56
Exhaust temperature sensor 2-56
VSV (for canister purge) 2-56
canister 2-56
engine control computer 2-57
electronic throttle
Control System (ETCS) 2-72
[1JZ-GTE] 2-72
supplies ..... 2 — 72
Parts layout diagram/ 2-73
Functional check ..... 2 — 74
Snow indicator inspection/ ..... 2 — 74
Throttle valve motor inspection 2-74
troubleshooting 2-75
Fail-safe function ..... 2 — 75
Diagnosis check... ..... 2 — 75
Diagnosis code deletion/ ..... 2 — 75
Diagnosis code list... 2-77
Unit inspection 2-79

2

Double steamed noodles
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Snow mode switch/ 2-79
snow indicator 2-79
Throttle control relay 2-79
Throttle valve motor ..... 2 - 80
Main Throttle Position Sensor 2- 80
sub throttle position sensor 2-80
Front speed sensor 2-80
Rear speed sensor 2-80
throttle control computer 2-80
Engine ASSY 2-84
preparation 2-84
Engine assembly desorption 2-85
Tightening torque table/ 2-85
Precautions for desorption work 2-86
vacuum piping 2-87
Piping diagram 2-87
partial engine 2-89
Exploded view 2-89
engine body 2-92
supplies 2-92
Timing Belt ..... 2 - 95
configuration diagram 2-95
Points to note when removing 2-96
Check before installing the timing belt 2-97
Precautions for installation work... 2-97
Crankshaft front oil seal 2 ..... - 99
Precautions for desorption work 2-99
camshaft oil seal 2-100
blue sky configuration diagram 2-100
Precautions for desorption work 2-102
cylinder head gasket 2-104
Deconstruction ..... diagram 2-104
Points to note when removing 2-107
Pre-installation inspection 2-107
Notes on installation 2-107
Engine rear oil seal 2-111
Notes on desorption work 2-111
Lubrication 2-112
supplies 2-112
Function check 2-113
Oil pressure inspection/ 2-113
Oil Filter & Union 2-114
Precautions for desorption work 2-114
oil pump... 2-114
Oil Cooler (1JZ-GTE) 2-115
deconstruction 2-115
diagram cooling 2-116
Preparations 2-116
Cooling water exchange 2-117
Function check 2-117
Cooling system leak check 2-117
Unit inspection 2-117
Thermostat 2-117
radiator cap 2-117
water pump 2-118
Diagram 2-118
Precautions for desorption work 2-119
thermostat 2-120
Ignition 2-120
diagram 2-121
supplies 2-121
Unit inspection 2-122
Spark plug 2-122
Resistive code 2-122
ignition coil... 2-122
Starting 2-123
2-123 ..... Starter
..... 2-123
2-123 Precautions for attaching/ ..... detaching
Single unit inspection 2-123
Starter relay check/ 2-123
charging 2-124
Prepared items 2-124
Functional check 2-124
Alternator 2-124
Precautions for desorption work 2-124
Turbocharger & Intercooler (1JZ-GTE) 2-125
supplies 2-125
Function check 2-125
Turbocharger system inspection 2-125
Turbocharger 2-126
Deconstruction ..... diagram
2-126 Intercooler 2-127
Desorption configuration diagram 2-127
2-127 Precautions for attaching/ ..... detaching
single point 2-128
air flow meter 2-128
ABV 2-128
VSV 2-128
Actuator 2-128

turn around

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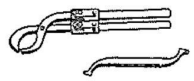
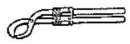
T3040540

engine adjustment

preparations

2

S S T

	09248-55040	valve clearance adjustment tool set	
	(09248-05410)	valve lifter press	For valve clearance adjustment
	(09248-05420)	valve lifter stopper	For valve clearance adjustment

instrument

	09082-00012	toyota electrical tester	For each part point
	09843-18010	copulse pickup wire	For tachometer connection
	09843-18020	Diagnosis check wire	For short-circuiting the diagnostic connector
	TBGCG-100 TIGCG-100	Gasoline compression gauge set handled by Banzai Co., Ltd. Handled by Iyasaka Co., Ltd.	For compression pressure inspection
timing light KTL12B	(Current detection type) Handled by Banzai Co., Ltd.	24101	For ignition timing point
Timing light TL-12C	(current detection type) Treated by Iyasaka Co., Ltd.	24102	For checking ignition timing
COHC meter		22201	For COHC concentration measurement
Micrometer (0~25mm)		20301	For valve clearance adjustment

Fats and oils Other

spark plug cleaner	54101	For cleaning spark plugs
seal packing black	50902	For mounting the cylinder head cover

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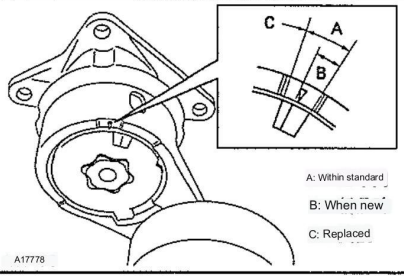
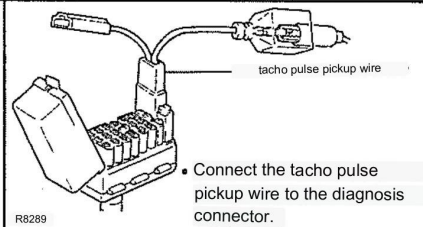
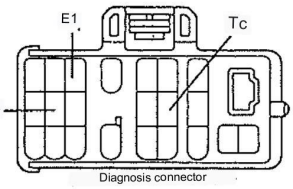
noodles time steamed

T0040531

Basic inspection

2

Inspection item [unit]		quasi-confidence 1 JZ. 2JZ-GE	1JZ-GTE	the point
battery ratio		1.25~1.29 (20℃)		——
V-ribbed belt				· Check with the auto tensioner indicator Replace the V-ribbed belt: Point 1 Check the auto tensioner: Point 2
Idle speed [r/min]		600-700		 • Connect the tacho pulse pickup wire to the diagnosis connector.
Ignition timing [BTDC°]	$T_c \leftrightarrow E_1$ 閉 *Short circuit	8~12 (1JZ-GE)	——	
	To E, 閉 opening	8 or more (1JZ-GE)	——	
	$T_{E1} \leftrightarrow E_1$ 閉 |short circuit	8~12 (2JZ-GE)	8-12	
	$T_{E1} \leftrightarrow E_1$ 閉 opening	8 or more (2JZ-GE)	8 or more	
	increase engine speed	advance quickly		Iai-23-1 Timing light connection Troubleshooting : Point 3
Intake manifold negative pressure [kPa {mmHg}]		60 (450)	63.3 (475)	——
Compression [Pa{kgf/cm²}]	standard value	1.27M (13.0)	1.23M {12.5}	· Remove all spark plugs. · Perform at 250r/min or more.
	limit value	1.08M {11.0}	0.88M {9.0}	
	difference	98k{1.0}	98k {1.0}	
fuel check [ka_{kgf/cm^}]	Regulator With negative pressure	186.3 (1.90)		Inspection: Point 4
	Regulator without negative pressure	230.5 269.7 (2.35~2.75)		
Valve clearance IN (cold) [mm]		0.15~0.25		Checks and Adjustments: Instruction 5
	EX (when cold)	0.25-0.35		
spark plug [mm]	Model	PK16TR11 (ND) BKR5EKPB11 (NGK)	PK20TR11 (ND) BKR6EKPB11 (NGK)	• Gap adjustment when new (1000km or less) Do not do anything other than · If cleaning is necessary, use a spark plug cleaner for a short period of time (20 seconds or less).
	Standard value	1.0~1.1		
	limit	1.3		
COHC concentration [% Lppm"	CO	1.0 or less		• After maintaining the engine speed at 2500r/min for 2 minutes.
	HC	800 or less		

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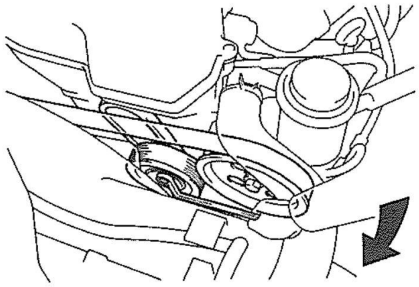
times recollection

T0049532

V-ribbed belt replacement

Procedure 1

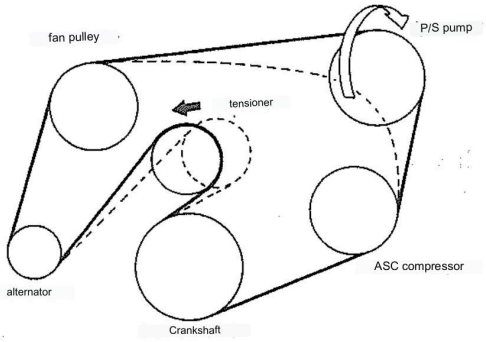
1 Removing the V-ribbed belt · Move the tensioner pulley to the left to loosen the tension and remove it.



A15533 R7228

2 V-ribbed belt installation

• Place the belt on the P/S pump pulley while the tensioner pulley is moved to the left.



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T0049905

Auto tensioner inspection

Inspection work	standard
After stopping the engine from idling, check the installation condition of the V-ribbed belt.	No belt protruding from the tensioner pulley
Remove the V-ribbed belt and move the tensioner clockwise.	no catch

JB3404

Point 2

· Perform the inspection work on the left, and replace the auto tensioner if it is out of the standard.

T0049906

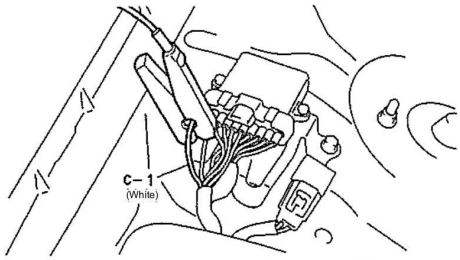
Ignition timing check

Point 3

<Reference> 1JZ-GE can also be checked with the diagnostic tool S2000.

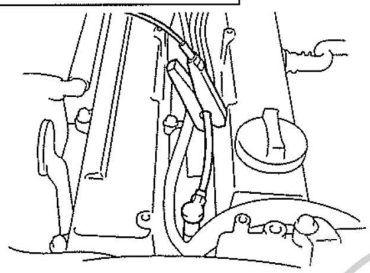
1 timing light connection

Confirmation by next signal detection of igniter



• Attach a primary signal detection type timing light to the C-1 (white) harness.

Confirmation by Resistive Code



• Remove timing belt cover No.3

Set the light Be careful not to get caught in the timing belt.

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JE3402

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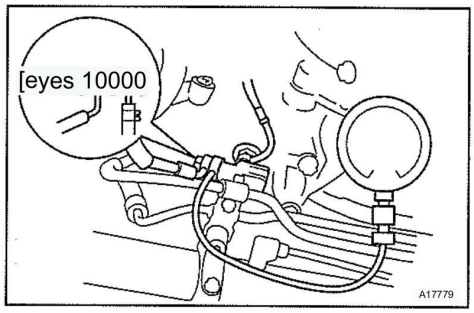
2 Ignition timing check

· If it is out of the standard value, perform the following inspection.

Inspection items	Inspection station	Reference
Diagnosis Code 59 Output presence/absence check	Check the valve timing (check if the timing belt has skipped teeth)	("troubleshooting " - "Diagnosis inspection") ("Engine body" - "Timing belt")
Main throttle valve fully closed inspection	▪ Main throttle screw clearance · Main throttle position sensor	("Engine control system" - "Individual inspection")

2



T0049047

fuel pressure check

Point 4

(1) Set the EFI pressure gauge as shown in the diagram, and

When connecting or disconnecting the vacuum hose of the regulator

Measure fuel pressure.

•Caution Use a new gasket.

[recollection times

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T0048533

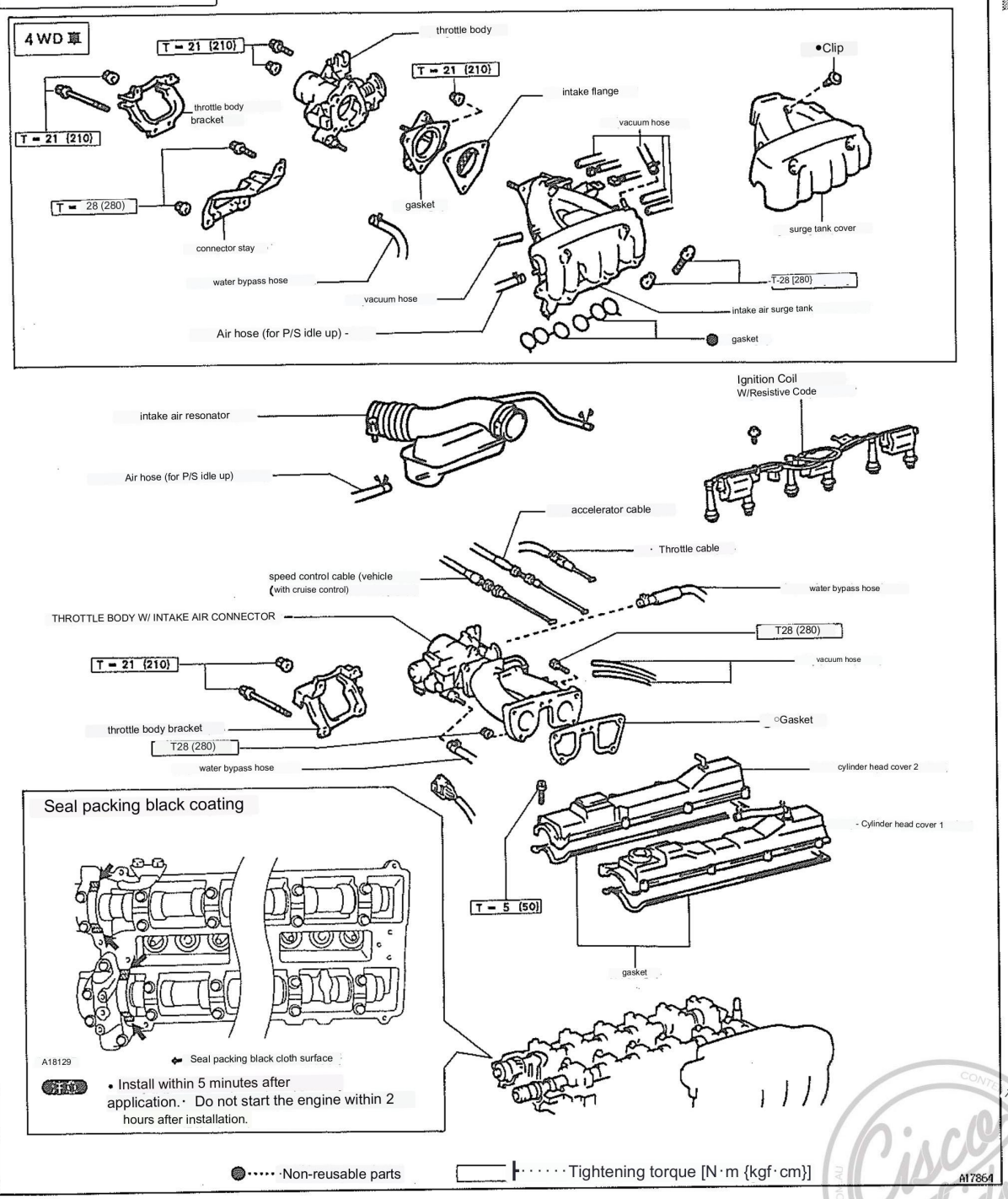
Valve clearance check/adjustment

Point 5

Repair required parts

2

1JZ-GE, 2JZ-GE



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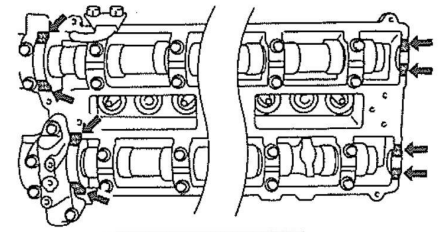
1JZ-GTE

Seal packing black coating



A17000

Area where seal packing black is applied

· Install within 5 minutes after application. · Do not start the engine within 2 hours after installation.

T = 8.0 {80}
Cylinder head cover 3
Timing belt cover No.3
T = 8.0 {80}
T = 2.5 {25}
-ISC pipe
Ventilation hose No.3
Cylinder head cover plate o.2 (for inspection and adjustment)
■ Ventilation hose 2
eyes
-T2.5 [25]
Ignition Coil W/ Resistive Code (only when adjusting)
cylinder head cover 1 (inspection and adjustment)
accelerator cable
air cleaner hose
T = 20.5 {210}
Water bypass hose 6
T = 20.5 {210}
gasket
Air tube No.1 EX (2~6 cylinder adjustment)-
JSCV (IN 5 cylinder 調整時)
accelerator bracket IN2 (cylinder adjustment)
•Gasket
Water bypass hose No.5
T = 19 {195}
T = 43 {440}
air hose 1-
Engine hanger 1 (when adjusting EX1 cylinder)
T = 40 {408}
T = 40 {408}
engine hanger No.2 IN (No.6 with cylinder adjustment)
gasket
T = 20.5 {210}
- Throttle body IN1 cylinder adjustment)
P/S idle up hose
Water bypass hose No.7
Water bypass hose 4-

●·····Non-reusable parts
·····Tightening torque [N· m {kgf· cm}]

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2

Valve clearance check/adjustment

1 Valve clearance inspection (1)

Measure the valve clearance (○ indicates the measurement point)

No.1 cylinder compression top dead center → Rotate the crankshaft pulley forward 360° → No. 6 cylinder compression top dead center

IN side	○		○		○	
Cylinder No.	1	2	3	4	5	6
EX side	○	○		○		

IN 側		○		○		○
Cylinder No.	1	2	3	4	5	6
EX side			○		○	○

2 valve clearance adjustment

・ Select the shim and use SST to replace the shim as follows.

exchange.

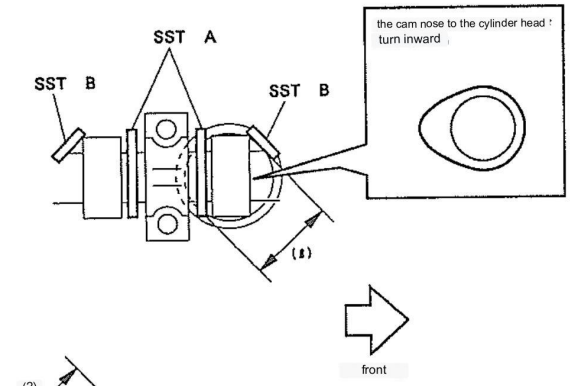
SST A. 09248-05410

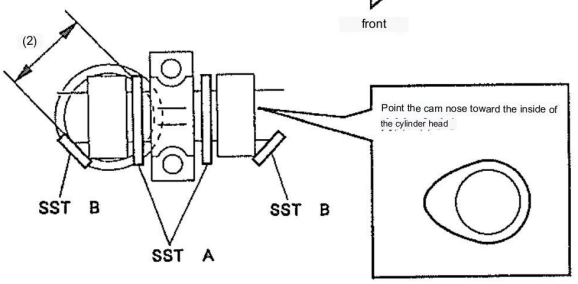
SST B. 09248-05420

Shim replacement procedure

SST position and cam position during adjustment

<Reference> The reason why the cam position is set as shown in the figure is to prevent the SST A from interfering with the cam nose and causing popping. • Set SST B by ensuring the shim diameter (l).



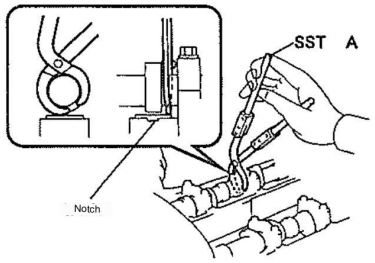


• Install the shim with the coated part (gold side) facing up. (Excluding 2JZ-GE)

• When installing the shim, apply enough engine oil to the surface. • When starting the engine immediately after shim replacement, keep the idle speed for about 2 minutes.

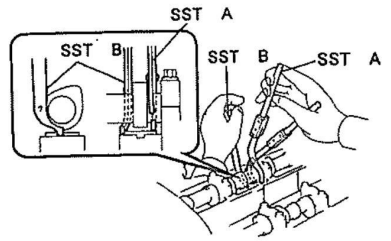
A18007

① Lower the lifter



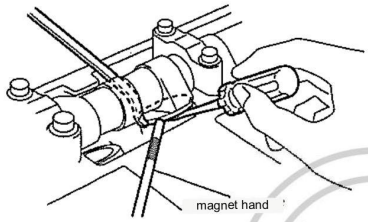
A17605

② Hold



A17607

③ Replace the shim



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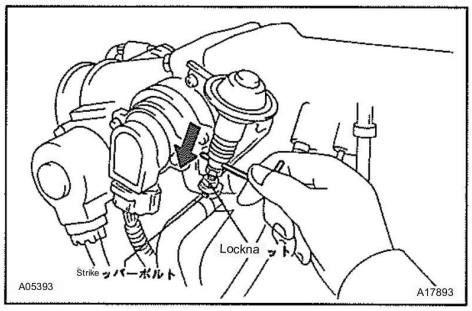
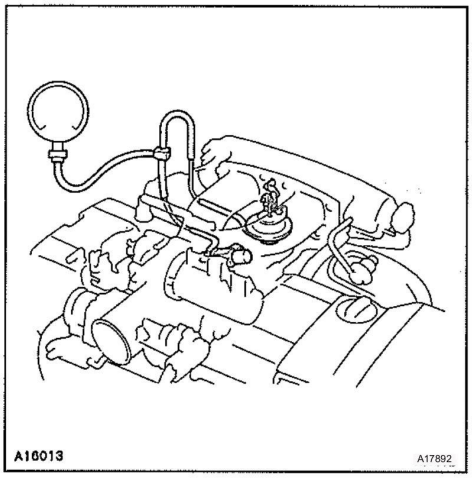


T0049534

Dashpot inspection/adjustment (1JZ-GTE M/T car)

Dashpot inspection/adjustment

(1) Insert a welding rod or the like into the small hole corresponding to the dashpot rod, and measure the engine speed when the rod is fully extended. Standard value 1200~1900r/min If it is out of the standard value, loosen the lock nut and turn the stopper bolt to adjust to the middle value of the standard value.



T0049535

Variable intake control system inspection (1JZ-GE, 2JZ-GE)

Functional check

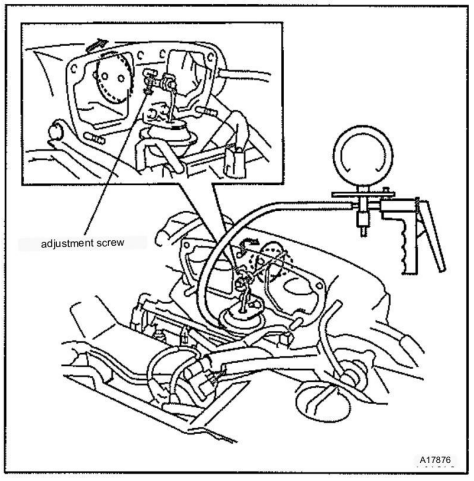
(1) Set the vacuum gauge as shown in the figure, and check the points according to each inspection condition.

perform an examination.

inspection conditions	vacuum gauge pointer	VSV actuation	valve
at idle rotation	0	OFF	open
4500r/min (1JZ-GE) 4050r/min (2JZ-GE)	rise	ON	closed

Unit inspection

variable intake control valve



(1) Set the mighty bag as shown in the figure, and check the points according to each inspection condition.

perform an examination.

Inspection	standard	Out of standard
conditions Actuator apply negative pressure	the valve is fully closed	adjustment screw Adjust with
Maintain the above conditions for 1 minute	No change in pointer	actuator replacement

recollection
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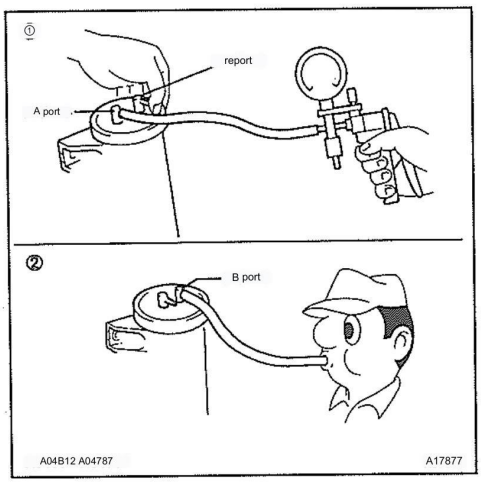


vacuum surge tank

1 Airtightness check

(1) Perform inspection according to each inspection condition.

Turn-on condition		standard
As shown in Fig. 1, close the B port with your finger and apply a negative pressure of 60kPa {450mmHg} and leave it for 1 minute.		No change in guidelines
Check B port ventilation as shown in Figure 2	blow	no ventilation
	inhale	Ventilated

JB3408

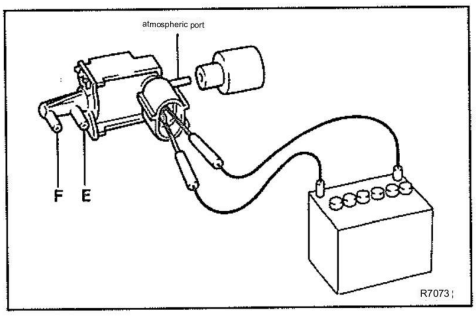
2

VSV

1 Ventilation check

(1) In the state shown in the figure, check for airflow between each port according to the inspection conditions.

do.



group 準		
Turn-on condition	Ventilation condition between each port	
When not energized	E atmosphere port	Ventilated
	E-F	no ventilation
When energized	EF	Ventilated
	Atmospheric ports E and F	no ventilation

JB3409

recollection times
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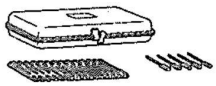
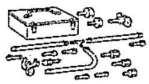
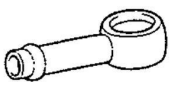
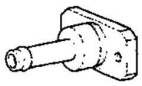
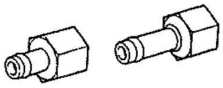
70048324

Engine control system

Preparation product

2

S S T

	09203-00020	Thickness gauge	For throttle position sensor inspection
	09240-00020	Wire gauge set	
	(09242-00030)	Wire Gauge (0.3mm)	For inspection of sub-throttle position sensor
	Wire gauge (0.4mm) 09242-00040	70055	For inspection of sub-throttle position sensor
	Wire gauge (0.5mm) 09242-00050	70056	For inspection of sub-throttle position sensor
	Wire gauge (0.9mm) 09242-00090	70060	For inspection of sub-throttle position sensor
	Wire gauge (1.0mm) 09242-00100	70061	For inspection of sub-throttle position sensor
	Wire gauge (1.1mm) 09242-00110	70062	For inspection of sub-throttle position sensor
	09268-41046	injection measure ring tool set	
	(09268-41071)	Union No. 4	For injector inspection
	(09268-41091)	Union No.7	For injector inspection
	(09268-52011)	Injection measuring attachment	For injector inspection
	(90467-13001)	clip	For injector inspection
	(95336-08070)	HOSE	For injector inspection

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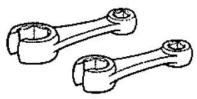
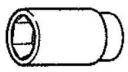
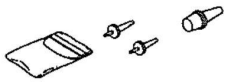
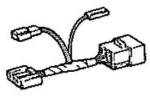
	09631-22020	Power steering hose nut wrench set	For removal of fuel main pipe
	09816-30010	oil pressure switch socket	Knock sensor removal

tool

	09258-00030	Hose plug set	Vacuum hose for airtightness

instrument

	09082-00012	toyota electrical tester	for each point
	(09083-00060)	Mini Test Lead	For engine control computer inspection For air-fuel ratio compensation point
Signal check terminal 09085-00300		23105	For inspection of catalyst overheating alarm device
	09842-30070	EF1 inspection wire F	For injector inspection
	09843-18020	Diagnosis check wire	DLC3, diagnostic connector and For TDCL short circuit
	09990-00112	o2 sensor checker	For air-fuel ratio compensation equipment
	09991-50100	Toyota Diagnosis Reader Set	For reading diagnosis code For air-fuel ratio compensation point bar For checking computer data
	09991-50320	Program IC card engine system 3	For reading diagnosis code For air-fuel ratio compensation For checking computer data
S2000 set 09991-60100		57302	For diagnostic code reading
S2000 program card 09991-60200		57303	[For reading diagnosis code
	82992-20010	o2 sensor checker wire	For O2 sensor checker connection
	TB-501 HVP-1	mighty back Treated by Banzai Co., Ltd. Treated by Iyasaka Co., Ltd.	For vacuum sensor inspection For canister inspection

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sound scope 20801	injector For confirmation of operation sound
Graduated cylinder 21601	For checking injector injection quantity
Stopwatch 20901	For checking injector injection quantity
oscilloscope 20501	For engine control computer inspection
temperature gauge 21701	For inspection of water temperature sensor and intake air temperature sensor

Fats and oils Other

gasoline 32204	For mounting injector and pressure regulator rings
Toyota genuine long life coolant 32001	For cooling water replenishment
yellow paint 51103	Throttle position sensor and main For sealing the rotor stop screw
Vinyl tube 52005	For injector inspection

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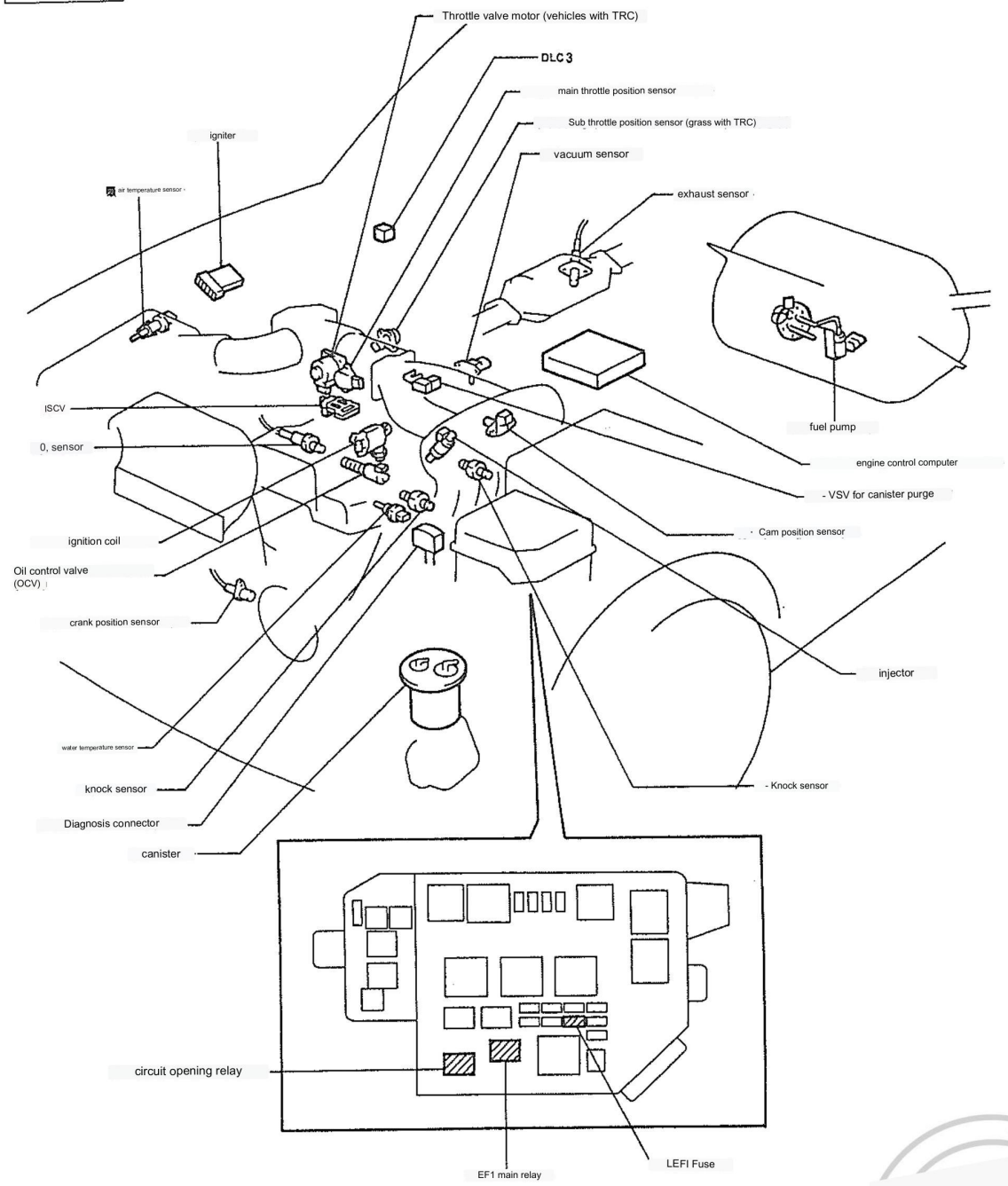
T0043325

parts layout

2

1JZ-GE



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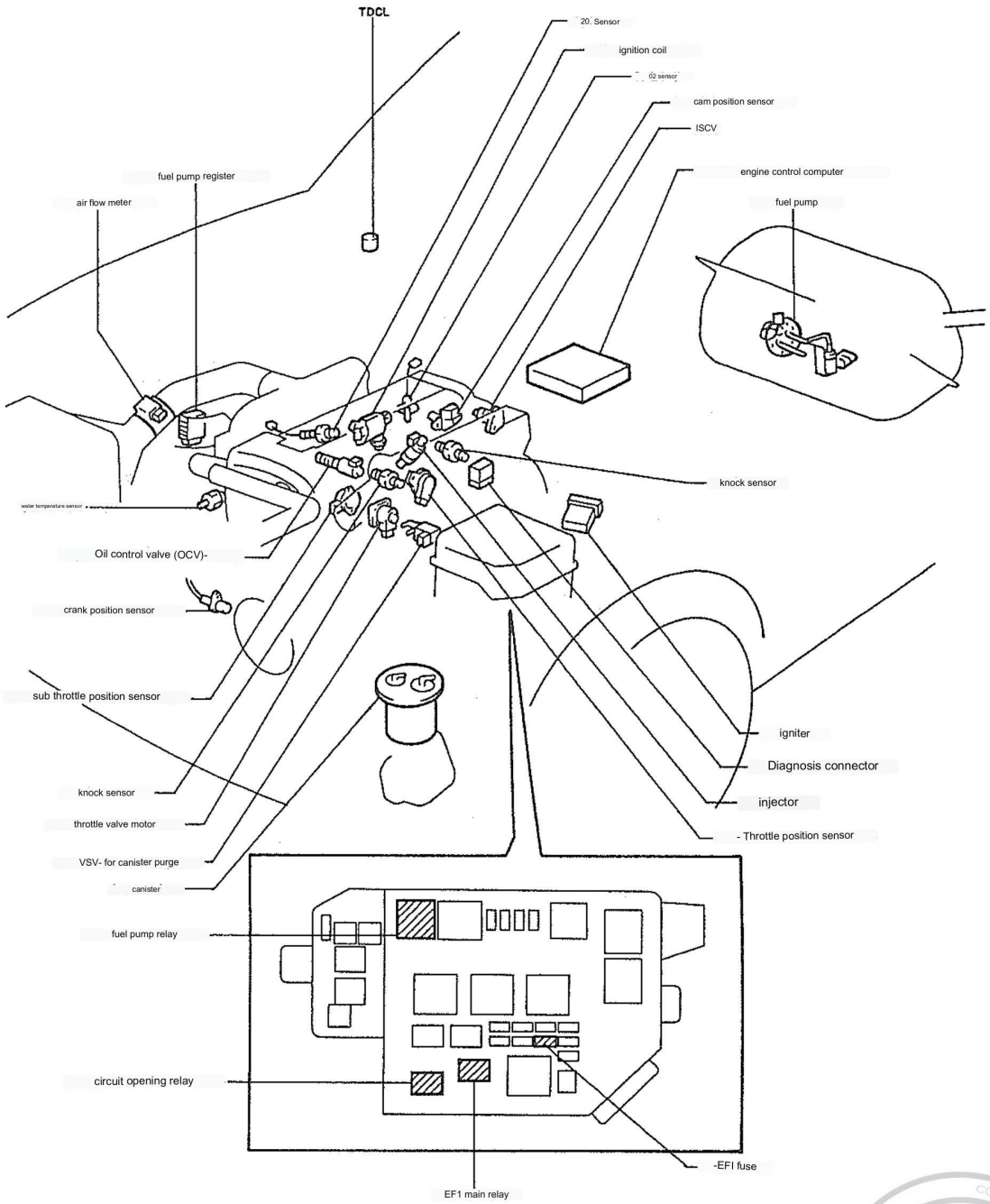
2

1JZ-GTE



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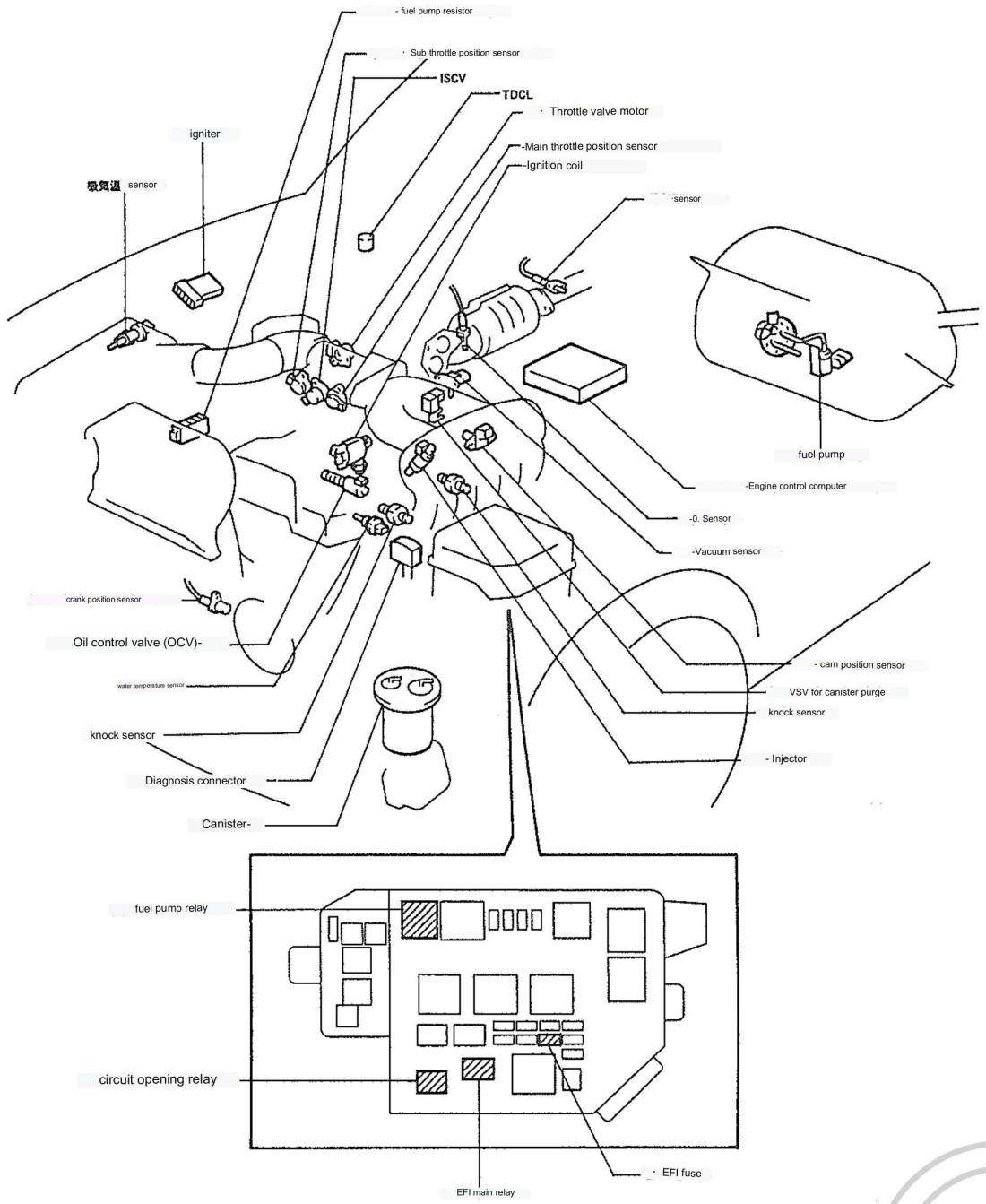
2 JZ－GE



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T0048329

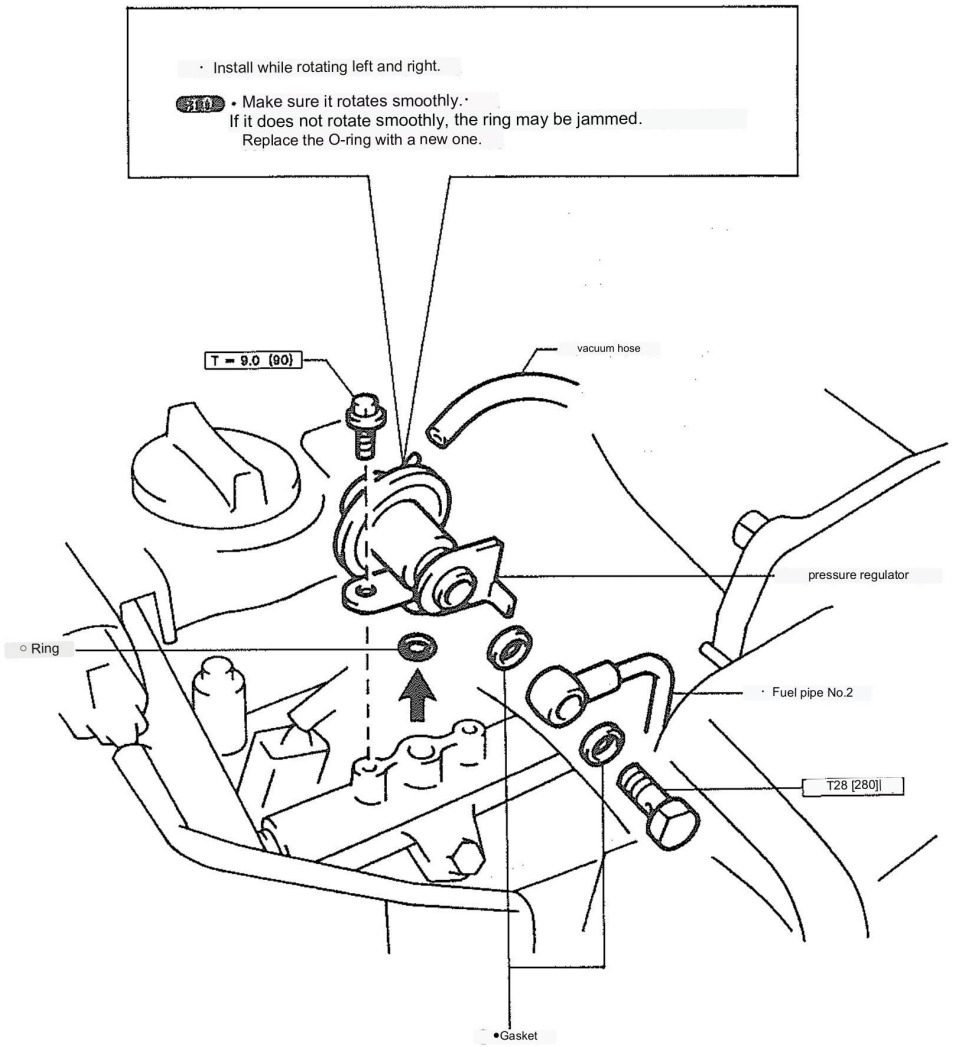
pressure regulator

Note: For the 1JZ-GTE engine, it is necessary to remove and install the delivery pipe, so do the work referring to the injector.

Desorption configuration diagram

2

1JZ-GE, 2JZ-GE



· Gasoline application ·····• Non-reusable parts ···· Tightening torque [N m_{kgf cm}]

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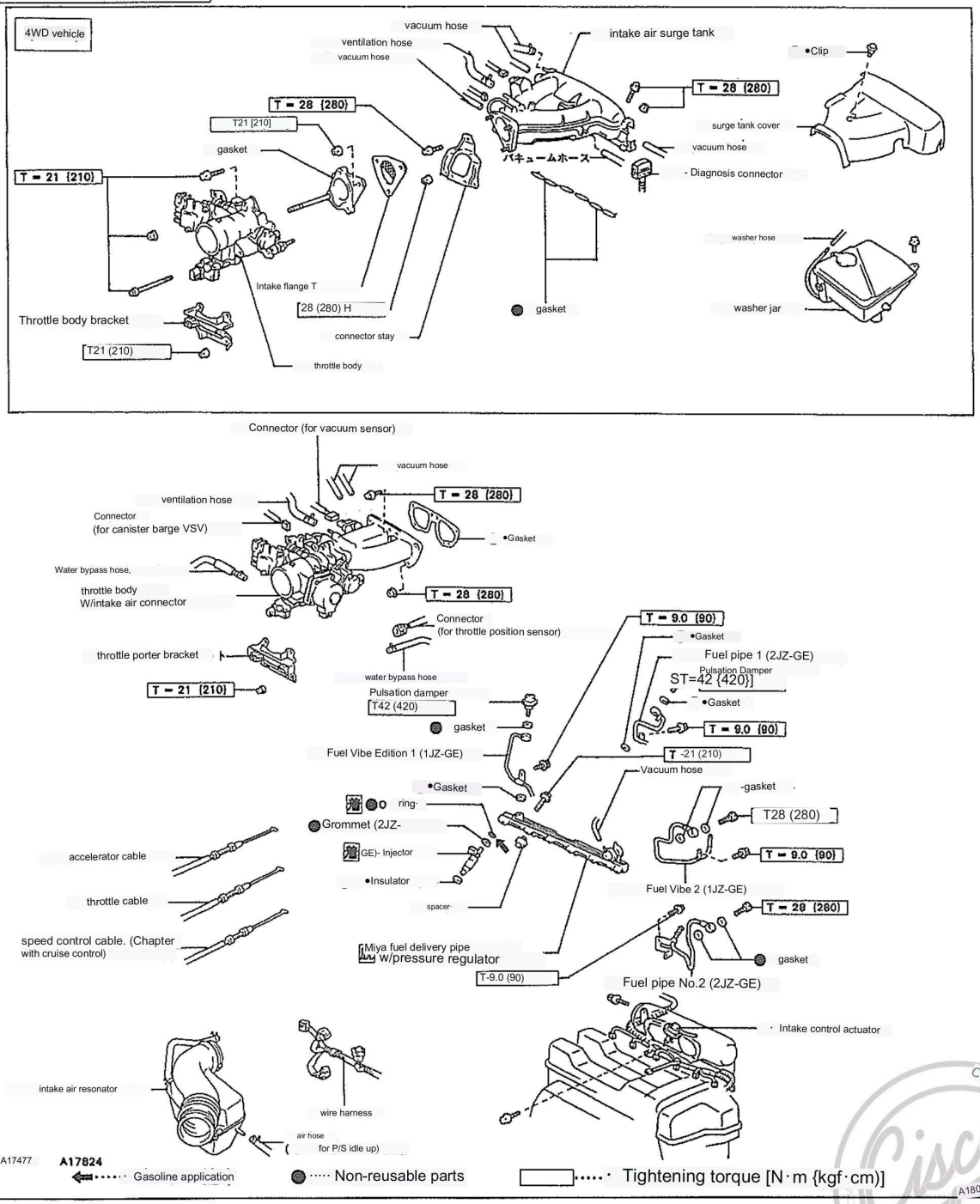
TC048330

injector

Desorption configuration diagram

2

1JZ-GE, 2JZ-GE



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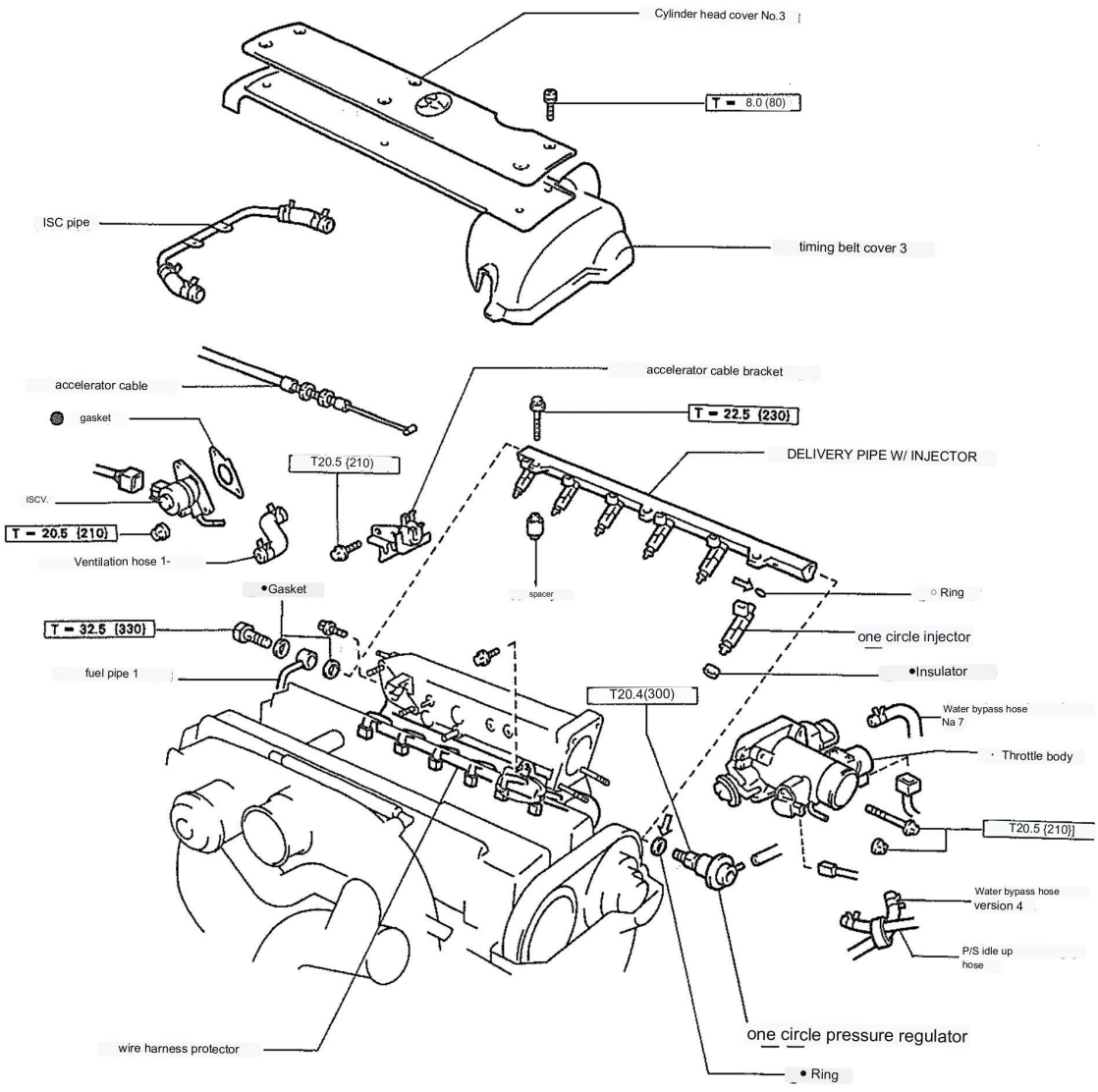
1JZ-GTE



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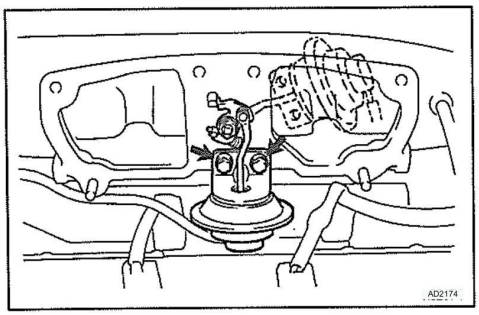

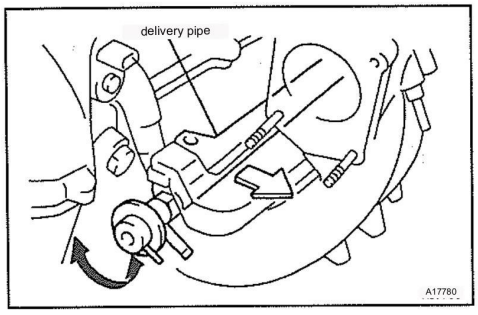

Precautions for desorption work

1 Delivery pipe w/ injector removal (1JZ-GE 2WD and 2JZ-GE)

(1) Secure delivery pipe W/injector removal/removal space.

Therefore, remove the two bolts and move the actuator as shown in the illustration.

Move it and fix it with vinyl tape.

Note · Do not apply excessive force to the actuator rod.

· When removing the delivery pipe W/injector

Do not drop the injector.

2 Delivery pipe W/ Injector removal (1JZ-GTE)

Remove

(1) Loosen the nut of the pressure regulator.

(2) Remove the delivery pipe bolt.

(3) Slide the delivery pipe in the direction of the arrow and press

Remove the shear regulator.

(4) Remove the delivery pipe W/injector.

attachment

(1) Delivery Pipe W/Injector via Spacer

Put it on the intake manifold. (2)

Slide the delivery pipe in the direction of the arrow and press

Temporarily attach the shear regulator.

(3) Install the delivery pipe W/ injector.

(4) Tighten the nut of the pressure regulator. 3

O-ring installation

· Make sure there are no scratches or foreign matter adhering to the O-ring groove of the injector.

and

4 Install the injector (1)

Rotate the injector left and right while installing it on the delivery pipe.

attach.

If it does not rotate smoothly, the O-ring may be caught, so remove the injector and replace the O-ring with a new one.

2

recollection times
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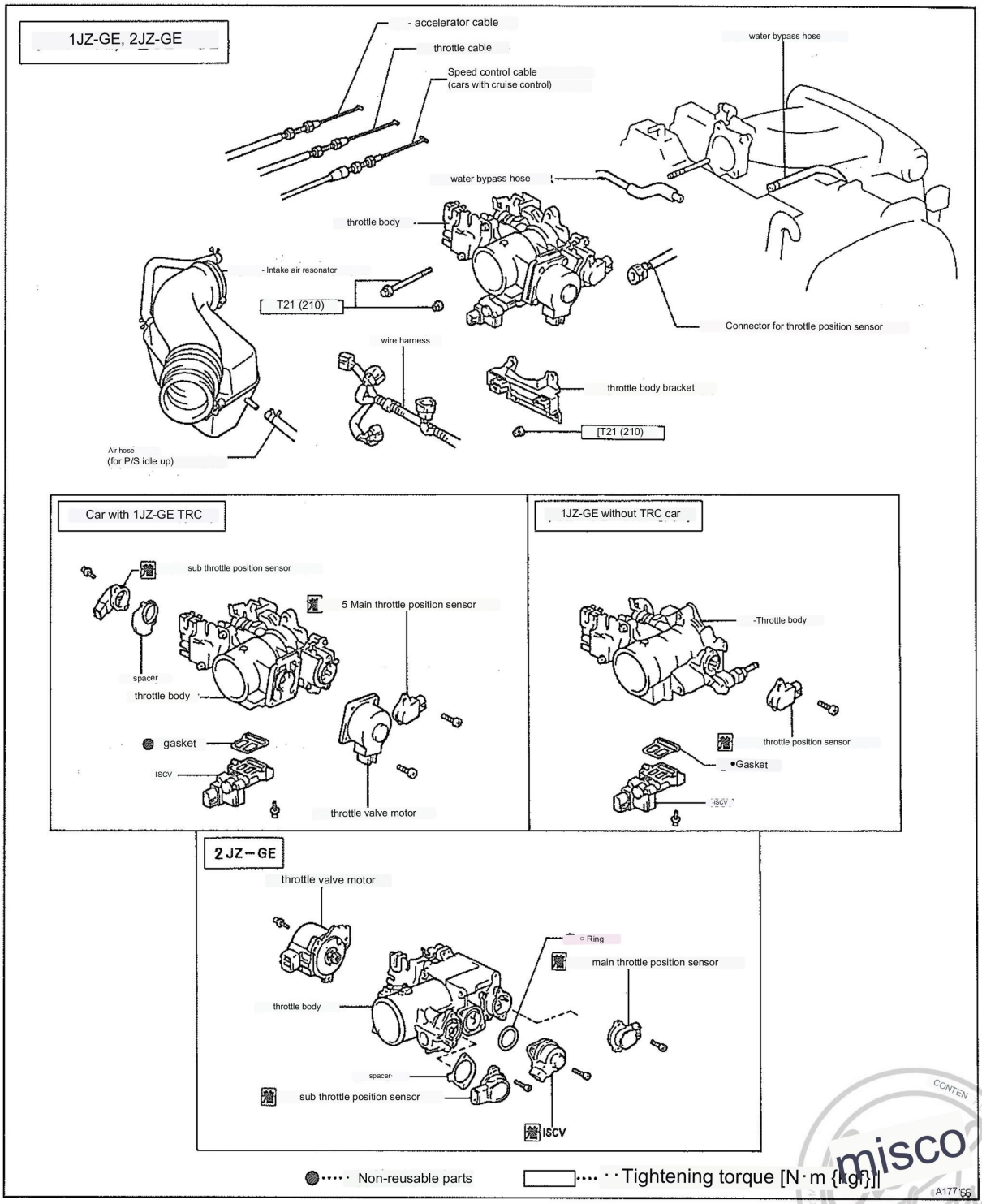
T0040341

throttle body

Desorption disassembled diagram

2



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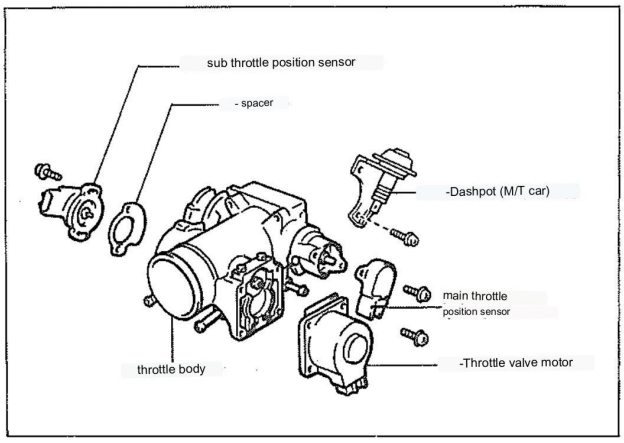
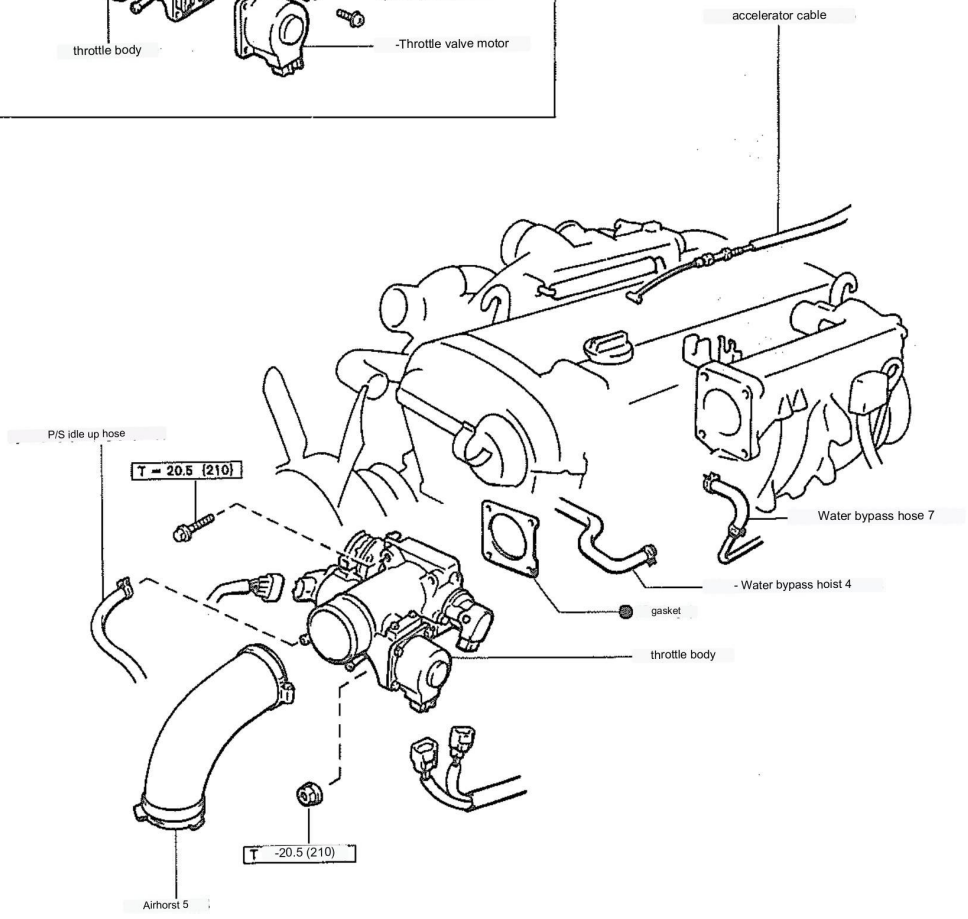
1JZ-GTE

2





●····· non-reusable parts □····· Tightening torque [N·m {kgf·cm}]

A17830

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2

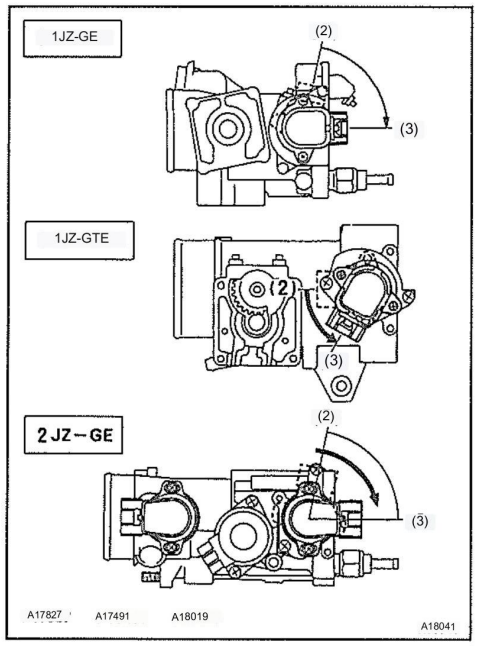
Notes on disassembly and installation work

Do not give a shock to the throttle position sensor and ISCV.

1 ISCV mounting (2JZ-GE)

Note · Make sure that the O-ring is not cut, twisted, or detached.

Install. · If it cannot be pushed all the way to the mounting surface, check if the O-ring is caught or twisted.

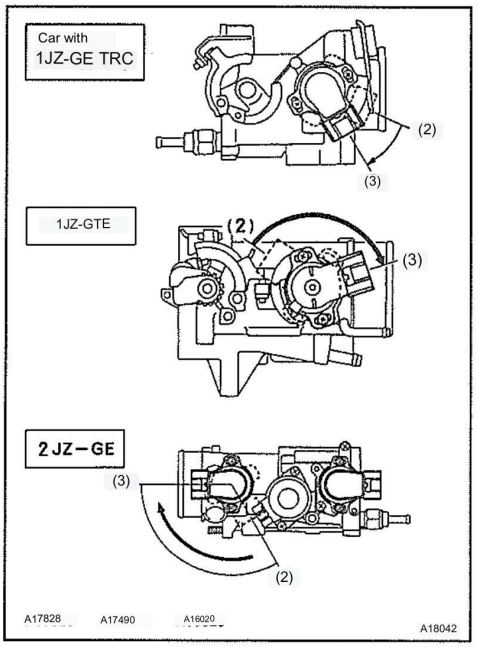


2 Install the main throttle position sensor

(1) Confirm that the throttle valve is fully closed.

(2) Rotate the sensor 60 to 120 degrees counterclockwise (clockwise for 1JZ -GTE) and insert it into the throttle body. (3) Rotate the sensor clockwise (counterclockwise for 1JZ-GTE) and tighten it at the specified mounting position.

3 Main Throttle Position Sensor Adjustment (2JZ-GE) (Refer to "Engine Control System" - "Individual Point Calibration")



4 Sub-throttle position sensor (1)

Manually set the sub-throttle valve to the fully closed state.

Caution Perform temporary tightening in the fully closed state.

(2) Rotated counterclockwise by about 120° with respect to the predetermined installation position of the sensor and fit it into the throttle body.

(3) Rotate the sensor clockwise and temporarily tighten it at the specified mounting position.

5 Sub-throttle position sensor adjustment (Refer to "Engine control system" - "Individual point calibration")

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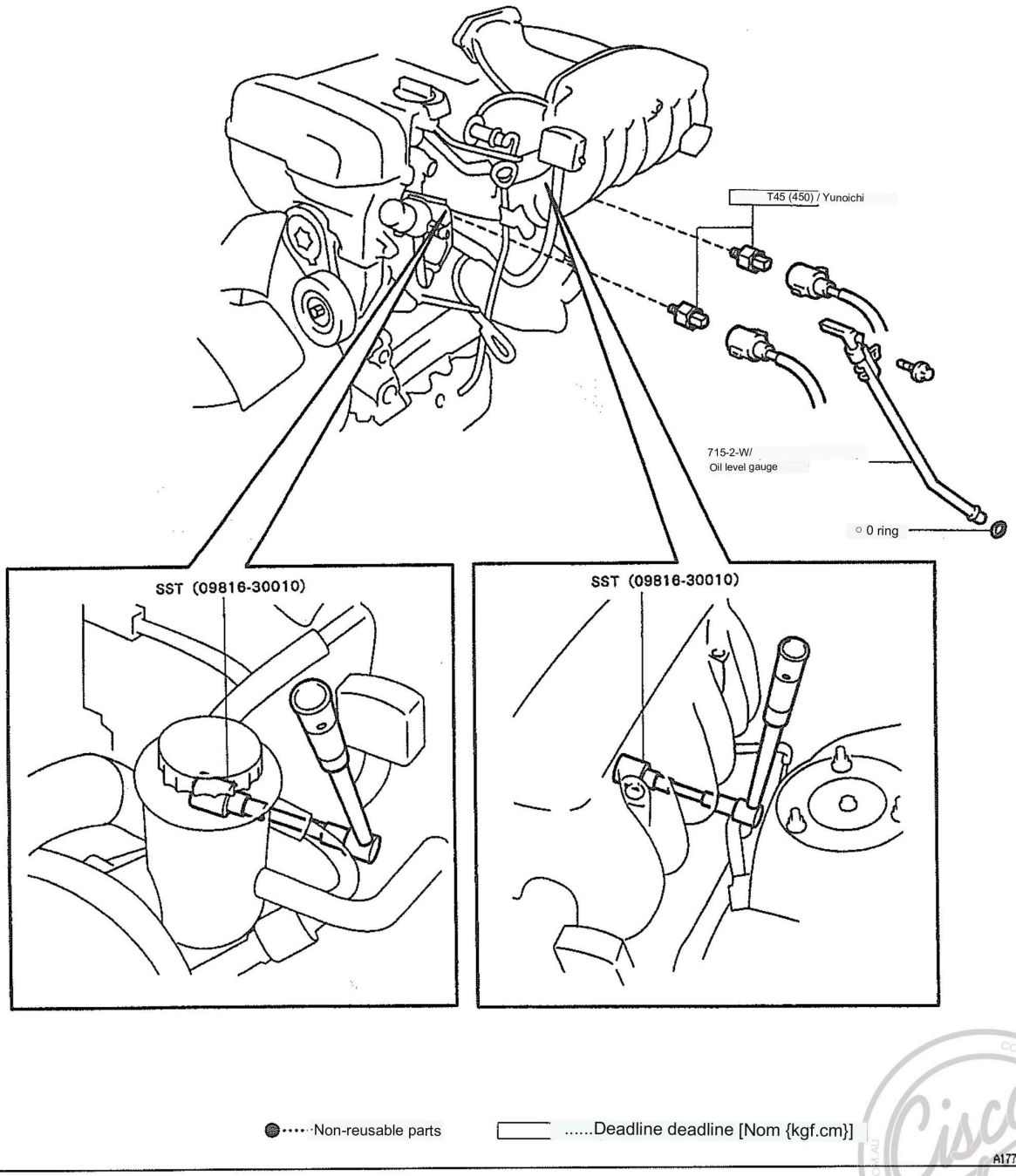
T0043332

knock sensor

Schematic diagram

1JZ-GE. 2JZ-GE

2



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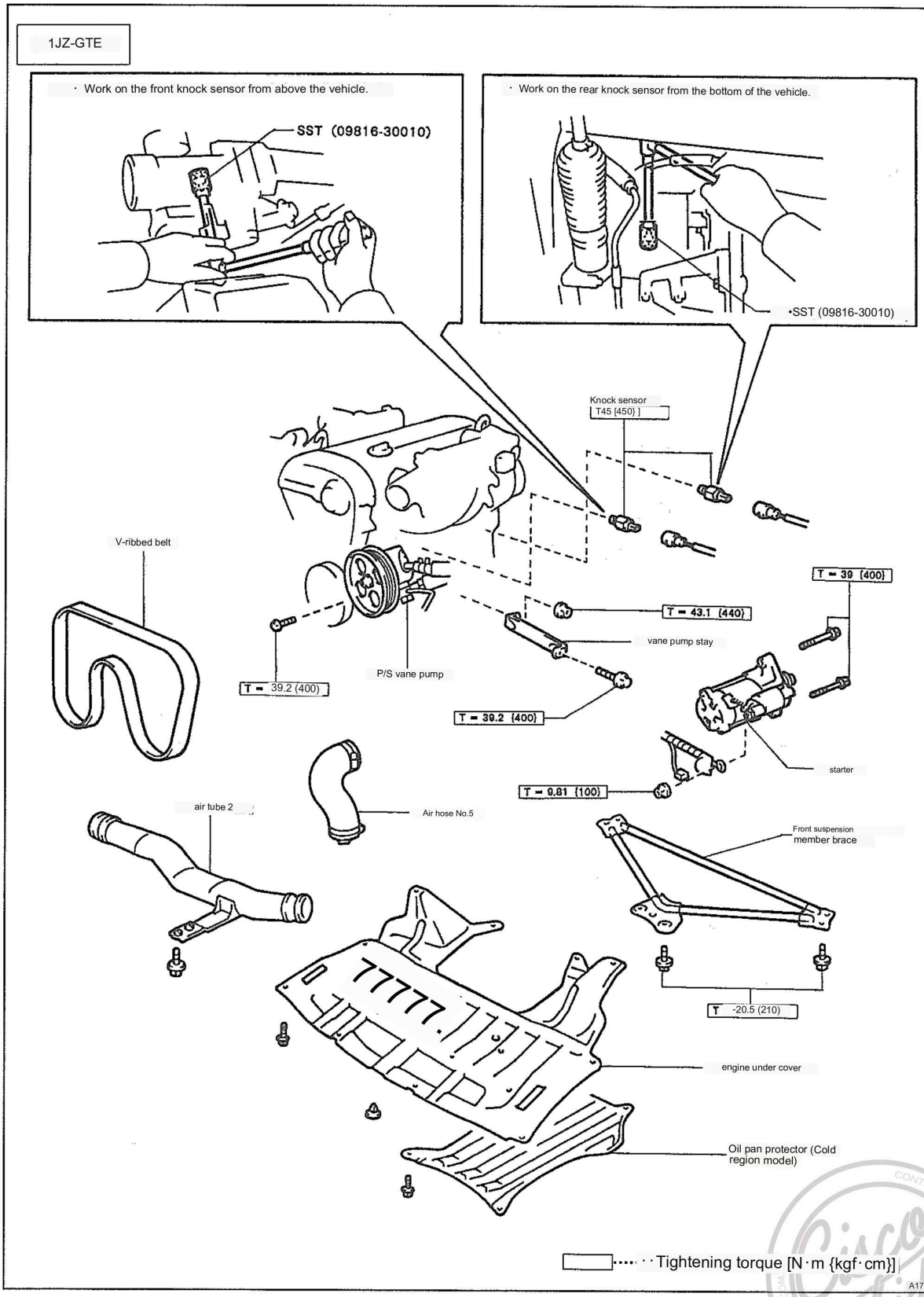
1JZ-GTE



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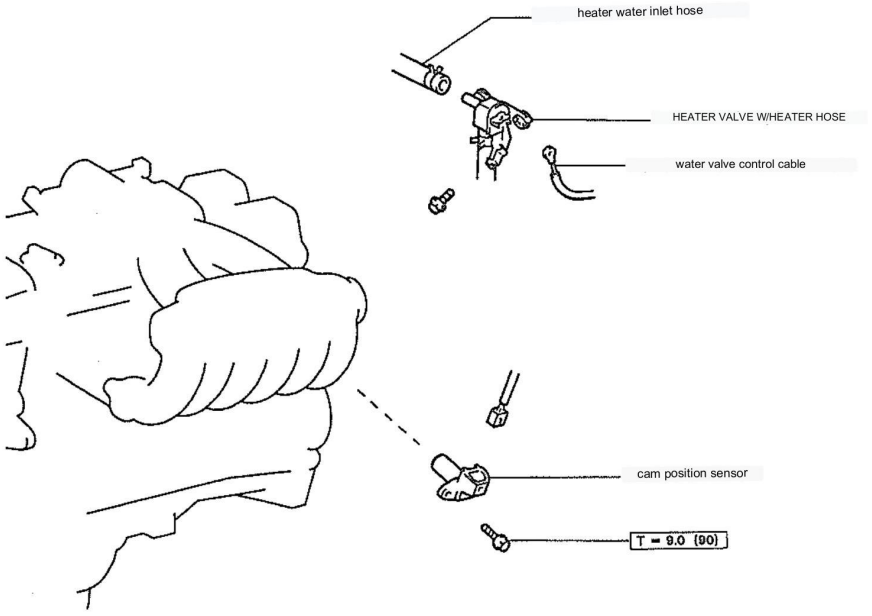
T0040510

cam position sensor

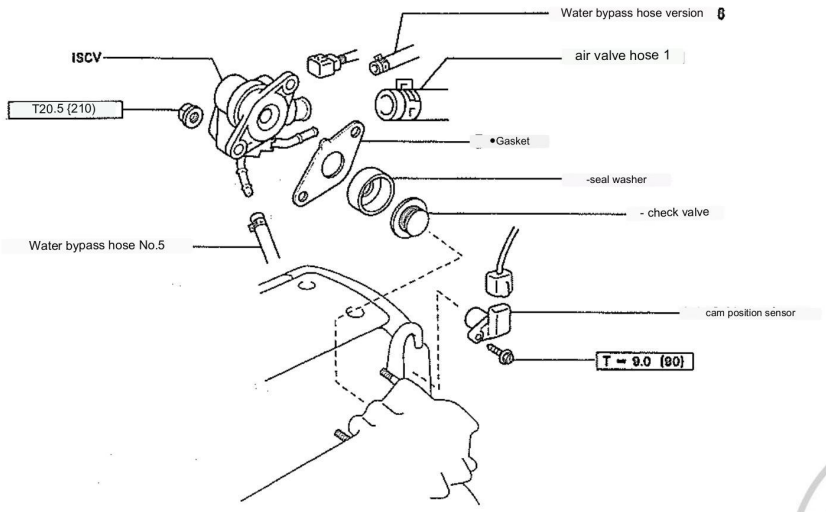
Desorption configuration diagram

2

1JZ-GE, 2JZ-GE



1JZ-GTE



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●····· Non-reusable parts

□···· Tightening torque [N·m {kgf·cm}]

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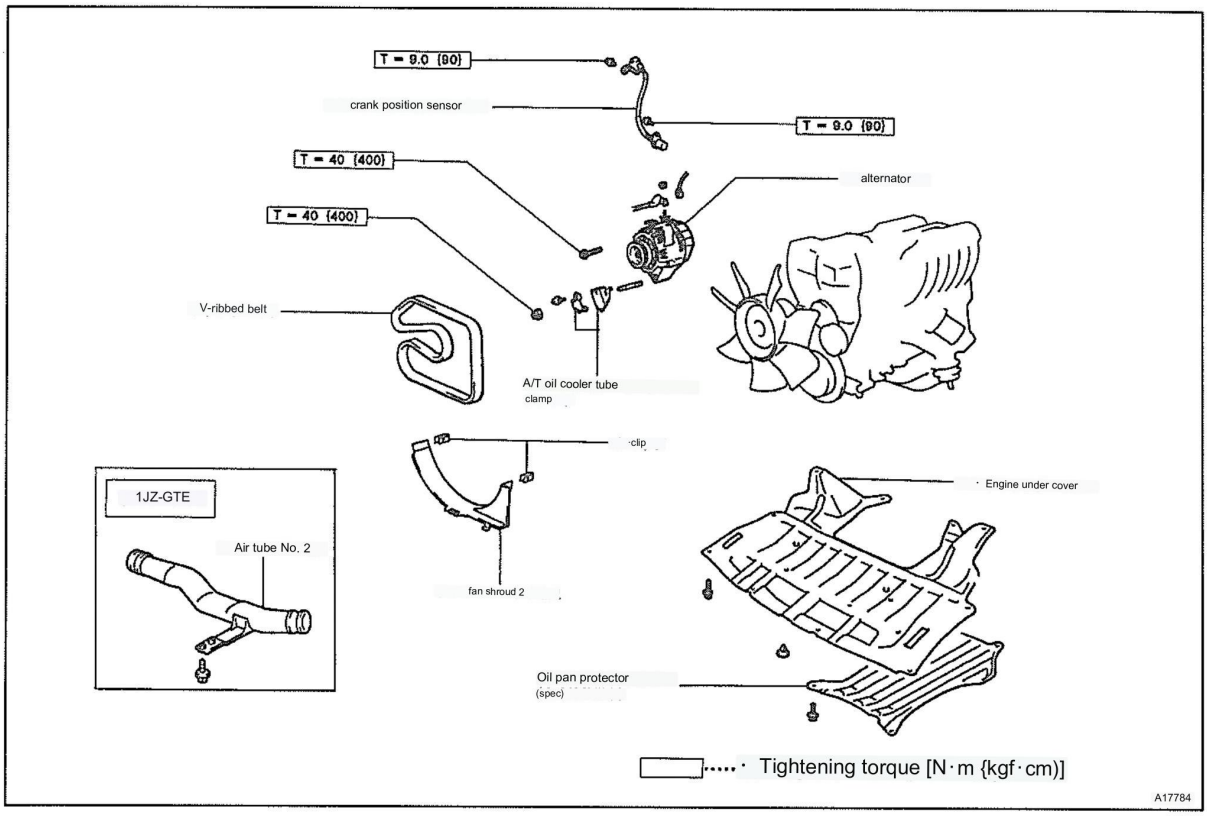
T0040511

crank position sensor

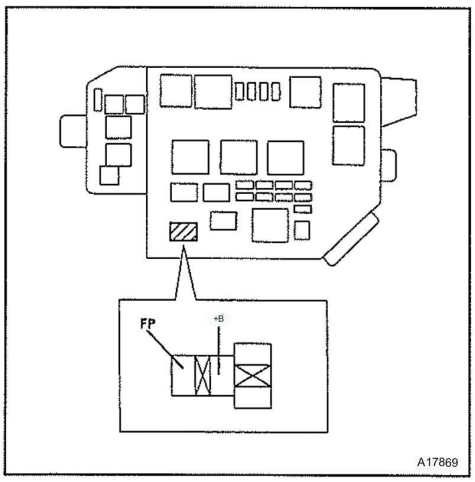
Dress configuration diagram



T0048333

engine control computer

("1G-FE Engine" - "Engine Control System" - "Engine Control computer")



T0048326

Fuel spill prevention work

· Before removing fuel system parts, be sure to perform fuel spill prevention work.· Since some residual pressure remains in the fuel pipeline even after fuel outflow prevention work, when removing the fuel pipeline, cover it with a waste cloth to prevent fuel from scattering.

1 Remove the circuit opening relay

2 Engine start

(1) Start the engine, let it stop naturally, and then turn off the ignition switch.

3 Remove the battery terminal

4 Install circuit opening relay

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T0048327

Functional check

Air-fuel ratio compensator function check

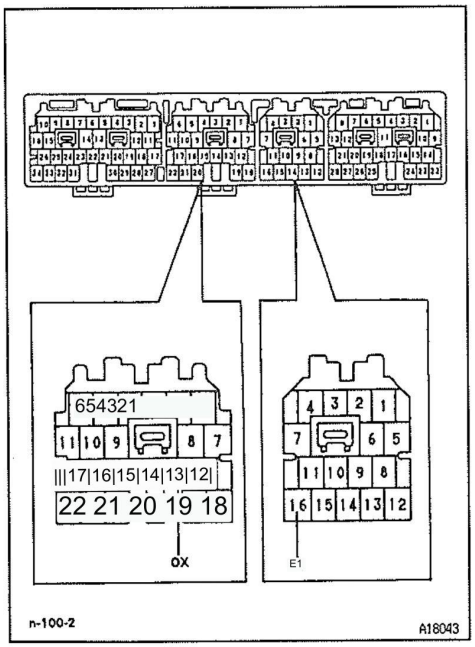
Air-fuel ratio compensator function check

· Select the inspection method from the table below and carry out the work.

2

	inspection 方 law	the point
1JZ-GE	Checking with OX voltage on the engine control computer	Procedure 1
	Inspection with diagnostic tool S2000	Connect the tool to DLC3 and check according to the screen display do
1JZ-GTE 2JZ-GE	Inspection by O2 sensor checker	Point 2
	Inspection by electrical tester	Point 3
	Inspection by a diagnostic reader	Point 4

JB3127



Point 1

(1) Connect the mini test leads to the Toyota Electrical Tester and set the rotary switch to the 20V range.

(2) Connect the ④ test lead of the tester to the OX terminal of the engine control computer, and the test lead to the E1 terminal.

注意 With the computer connector still connected to the computer, connect the test leads from the back side of the connector. (3)Keep the engine speed at 2500r/min for about 2 minutes, then turn the O2 sensor Warm up 。

(4) Keep the engine speed at 2500r/min and start the Toyota Electric Carte. Check that the star indication changes between 0 and 1V. (check feedback)

Criterion Changes 8 or more times in 10 seconds.

注意 · Since the O2 sensor gets cold, continue the work of (3).· If the tester's indication does not change, perform the work of (3) confirm.

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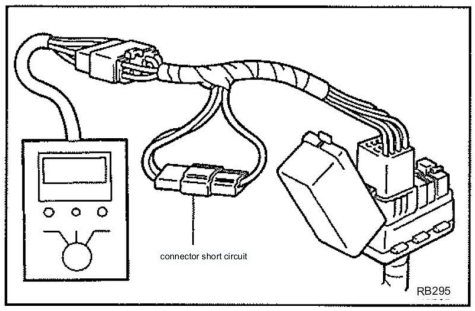


Point 2

(1) O to the diagnostic connector. Install sensor checker wire, install O2 sensor checker.

(2) Short-circuit the O2 sensor checker wire connector (between TE1 El terminals). (3) Keep the engine speed at 2500r/min for about 2 minutes and turn the O2 sensor Warm up.

(4) Set the switch of the O2 sensor checker to 0x1V, 1 side, Set the rotary switch to Vs, and the pointer should swing between 0 and 5V. to confirm. Also measure the number of times the Ox lamp blinks.

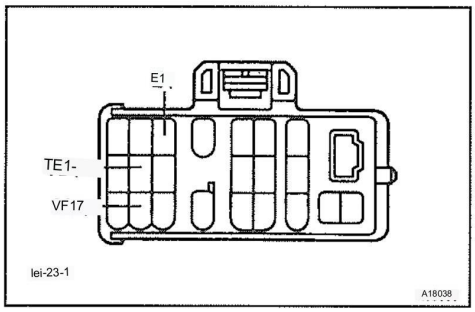
基 準 The pointer shakes 8 times or more in 10 seconds. The 0x lamp flashes 8 times or more in 10 seconds.

(5) Open the connector (between TE. terminals).

(6) Measure VE and voltage at idle speed.

Reference value 1.8~3.2V

注意 The 0x lamp of the O2 sensor checker is blinking during measurement. If the Ox lamp stops blinking, return to work 綠 from (2).



Point 3

(1) Connect the + terminal of the tester to the V7 terminal of the diagnosis connector and the one terminal of the tester to the E terminal. Failure

注意 to connect the diagnosis connector in the wrong position may result in malfunction. You can never make a mistake because it is the cause.

(2) Set the rotary switch of the electrical tester to the 20V range.

(3) Maintain the engine speed at 2500r/min for about 2 minutes to warm up the O2 sensor.

(4) Using a diagnostic check wire, short the T1E terminals of the diagnostic connector.

(5) Keep the engine speed at 2500r/min and check that the electrical tester ( ) reading changes between 0 and 5V.

基 Charge 8 times or more in 10 seconds

(6) T21E, open between terminals.

(7) Measure the electrical tester indication (V.1 voltage) at idle speed.

Reference value 1.8~3.2V

(8) Short-circuit the TEE and terminals, keep the engine speed at 2500r/min, and check that the electrical tester reading immediately changes between 0 and 5V. If the tester's instructions have not changed, repeat from step (3).

注意 Since the O2 sensor cools down, do the work after (4) in a short time.

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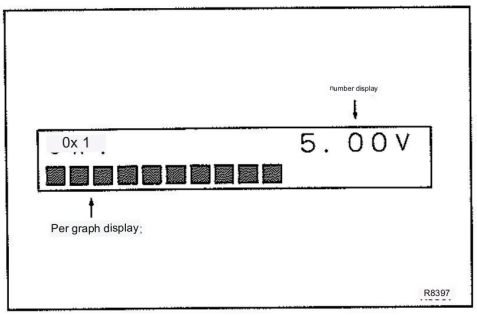
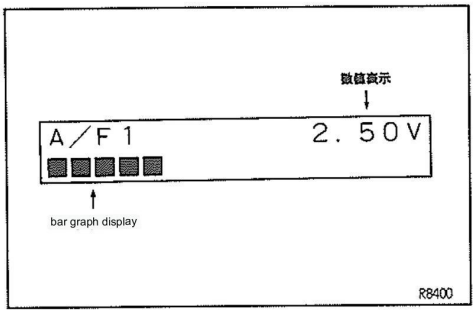




Point 4

(1) Enter the engine system code.

1JZ-GTE Engine System Code...800

2JZ-GE engine system code..... 818

(2) Operate the Toyota Diagnosis Reader to display the "0x1 screen".

〈参考〉 One bar graph represents 0.5V.

(3) Maintain the engine speed at 2500r/min for 2 minutes to warm up the Og sensor. (4)

The display voltage of the diagnostic reader fluctuates between 0 and 5V.

Confirm that the bar graph in the lower part of the display screen changes in synchronism. Criterion Changes 8 or more times in

10 seconds. (5) Operate the Toyota Diagnosis Reader to display the "A/F1 screen". and measure the VF voltage.

Reference value 2.5V

注意 Since the O2 sensor cools down, do the work after (4) in a short time.

<reference> One bar graph represents 0.5V.

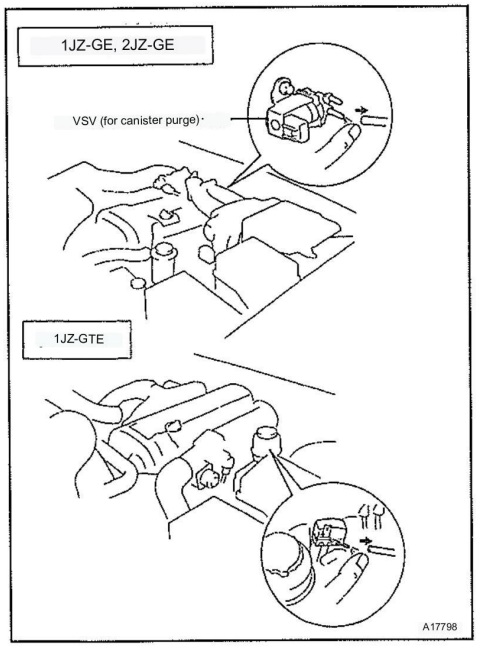
Deceleration control device (fuel cut device)

1 Fuel cut function check

(1) Set the engine speed to about 3000r/min.

(2) Check the operating sound of the injector using a sound scope. do. (3)

When the throttle lever is released, confirm that the operating sound of the injector stops for a moment and then starts again.



Fuel evaporative emission suppression device

〈参考〉 If the inspection result is abnormal, inspect the following items.

・ VSV (for canister purge) [P2-56] ・

Clogged vacuum hose (throttle body VSV)

Engine control computer PRG voltage [P2-62]

1 Functional check

1JZ-GE, 2JZ-GE

(1) Disconnect the vacuum hose connected to the canister from the VSV (for canister purge).

(2) Confirm that there is negative pressure when the accelerator is lightly stepped on.

1JZ-GTE

(1) Separate the vacuum hose shown in the figure.

(2) Confirm that there is negative pressure when the accelerator is lightly depressed.

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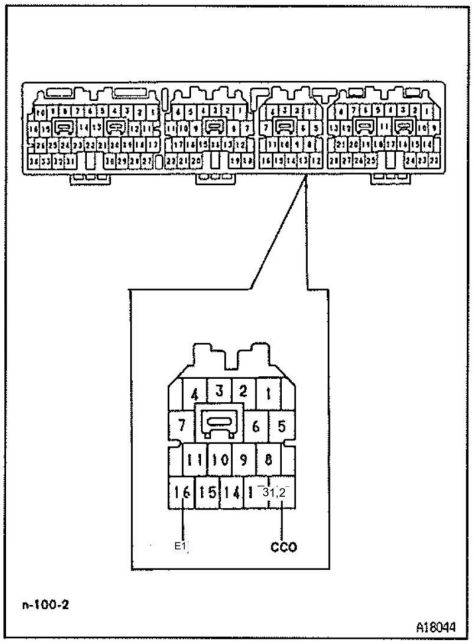


Catalyst overheat alarm device

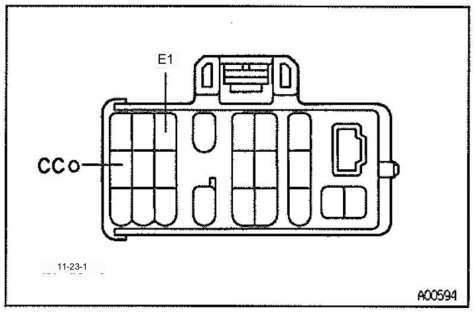
Catalyst overheat alarm device circuit check

1JZ-GE

(1) Check that the exhaust temperature lamp lights up when the ignition switch is turned on.

(2) Check that the exhaust temperature lamp goes out when the engine is started.

(3) Check that the exhaust temperature lamp lights when the CCO E1 terminals of the engine control computer are short-circuited while the engine is running.

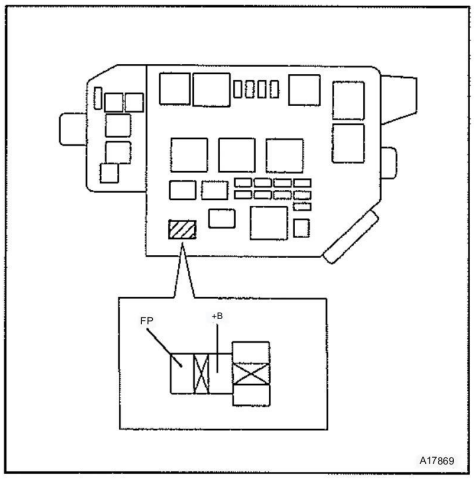


Except 1JZ-GE

(1) Check that the exhaust temperature lamp lights up when the ignition switch is turned on.

(2) Check that the exhaust temperature lamp turns off when the engine is started.

(3) With the engine running, use the diagnostic check wire to check the CC of the diagnostic connector. →E, short the terminals Check that the exhaust temperature lamp lights up.



Fuel pump operation check and fuel leak check

CAUTION Bear Be sure to check for fuel leaks after removing fuel system parts. 1JZ-GE can also be checked by diagnostic tool S2000.

〈参考〉 be.

1 Battery terminal installation

2 Circuit opening relay removal

3 Short between FP+B terminals

4 IG switch ON

5 Fuel pump operation check

6 Check for fuel leaks

7 IG switch OFF

8 Circuit opening relay installation

Steamed noodles
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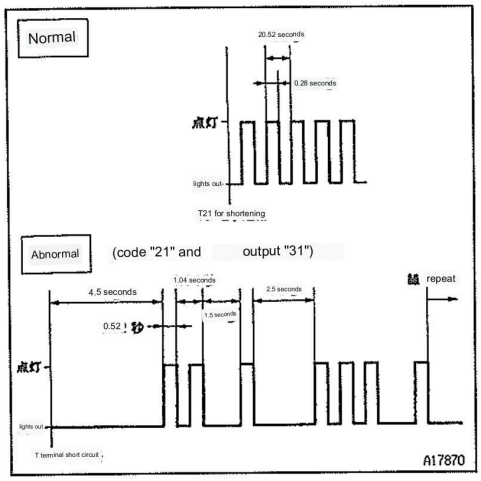

troubleshooting

Diagnosis check

Diagnosis code reading

1 Preparation before inspection

- Confirmation that the check warning lamp is lit
- Throttle valve fully closed (IDL contact ON)
- A/T car shift position (N or P range)
- A/C OFF

2 code reading

- Select the inspection method from the table below and read the code according to the procedure.

engine	Pointing method	required 傾	readable mode	
			Normal mode	test mode
1JZ-GE	Inspection with check warning lamp display	Point 1	○	x
	with diagnostic tool S2000 inspection	Connect the tool to DLC3 and read the code according to the screen display	○	○
1JZ-GTE 2JZ-GE	Inspection with check warning lamp display	Point 2	○	○
	Inspection by a diagnostic reader	Read the code using a diagnostic reader 1JZ-GTE 800 2JZ—GE ·····818	○	○

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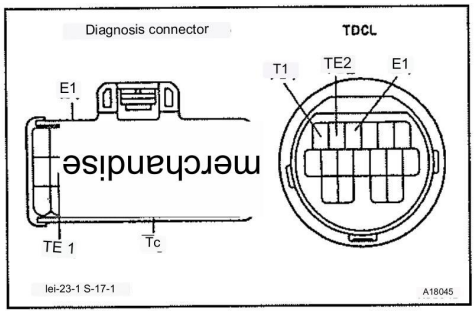

Procedure 1

1 To E, short circuit between terminals

- Using a diagnostic check wire, short the TcE terminal of the diagnostic connector. 2

IG switch ON

- Read the number of times the lamp

blinks. Point 2: Normal Mode

1 TE,E, short circuit between terminals

- Use a diagnostic check wire to connect the diagnostic connector TEE, between the terminals or between the Tx1 E' terminals of TDCL. short circuit.

2 IG switch ON

- Read the number of times the lamp blinks.

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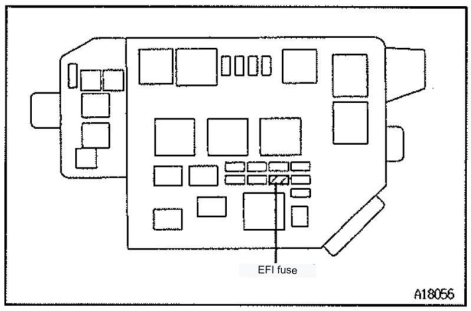

Point 2: Test mode

1 Normal code confirmation and memory erasure

- Remove the EFI fuse (20A) for 10 seconds or more, then turn the fuse on.

Connecting 2 TEE,

short circuit between terminals

- Using diagnostic sheath check wire, TE2 E1 of TDCL

Short the terminals.

3 IG switch ON

- Confirm that the check engine warning lamp is "fast flashing".

〈参考〉 "Fast flashing" indicates test mode.

4 engine start

- Confirm that the check engine warning lamp is extinguished.

be.

5 driving test

- Drive at a vehicle speed of 5 km/h or more.
- Reproduce the state in which the problem occurred (driving conditions, etc.).

6 TEE after driving, short circuit between terminals

- Using diagnostic check wire, TE of TDCL

Short the terminals and read the number of times the lamp blinks.

Diagnosis code list

- "SAE" in the diagnostic code indicates the output code when using the diagnostic tool S2000, and "Lamp" indicates the output code when using the check engine warning lamp. (SAE: Society of Automotive Engineers)

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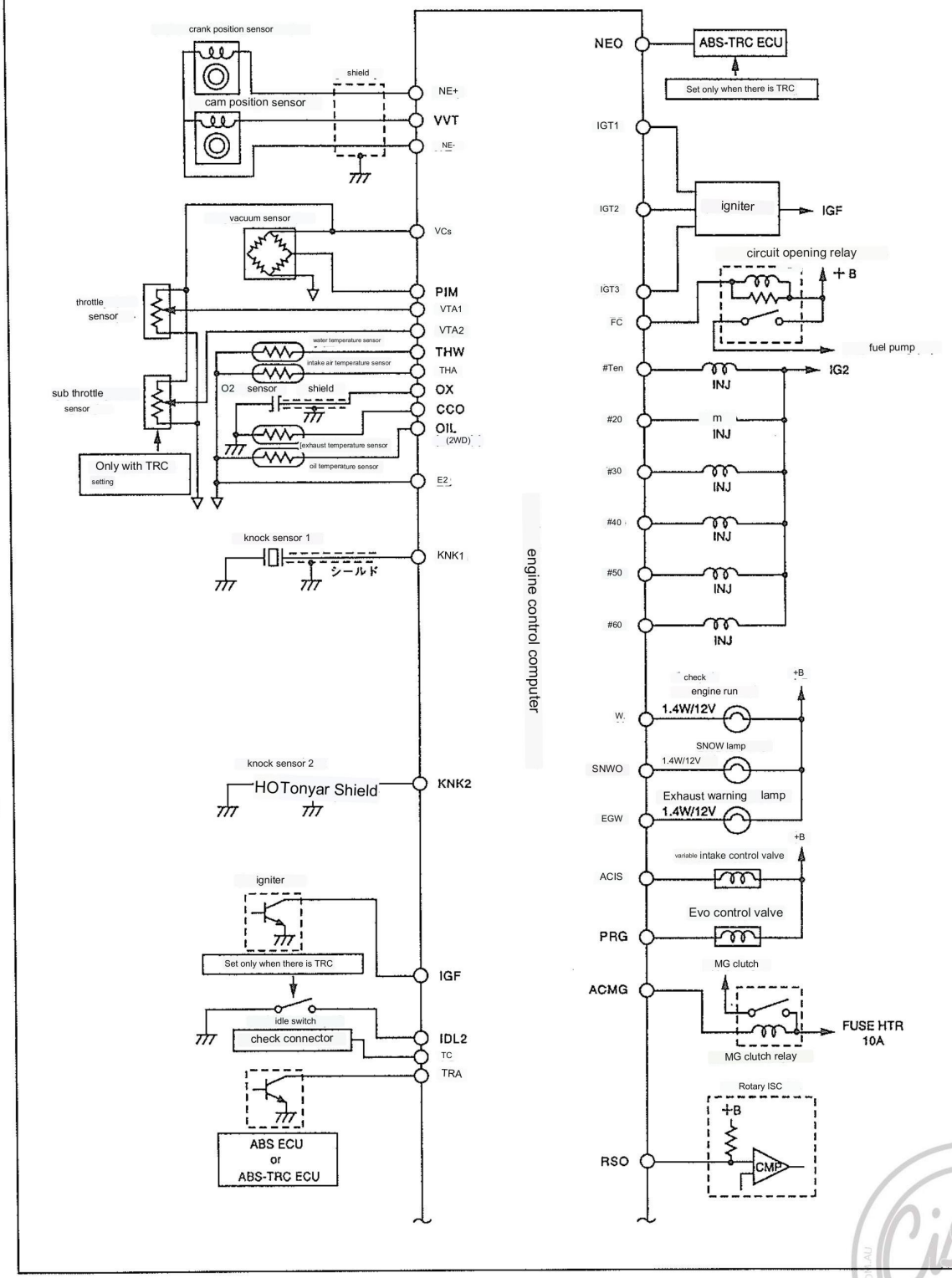
1JZ-GE External Connection Diagram (Overview) 1/2



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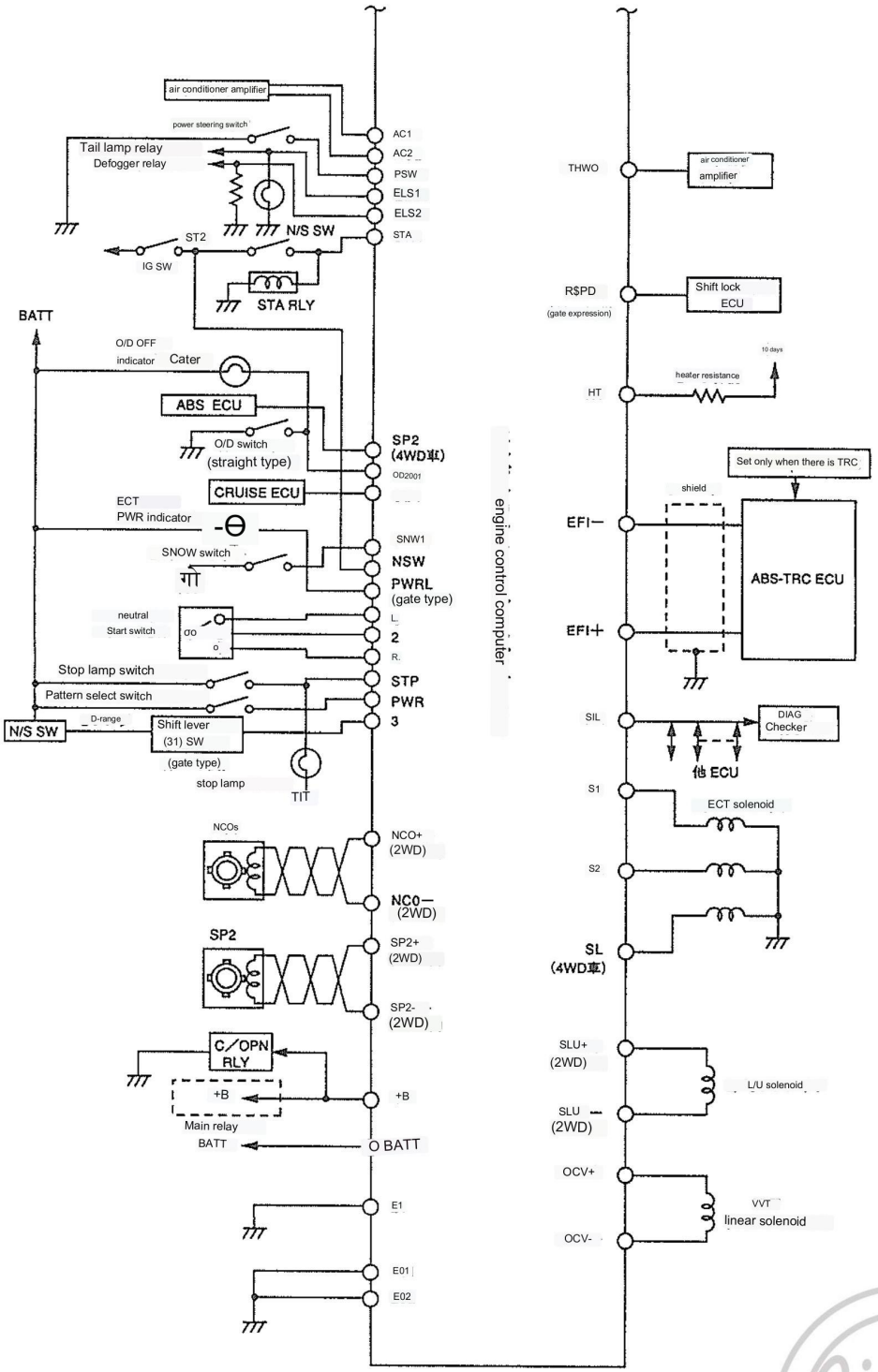
1JZ-GEN (E) 2/2



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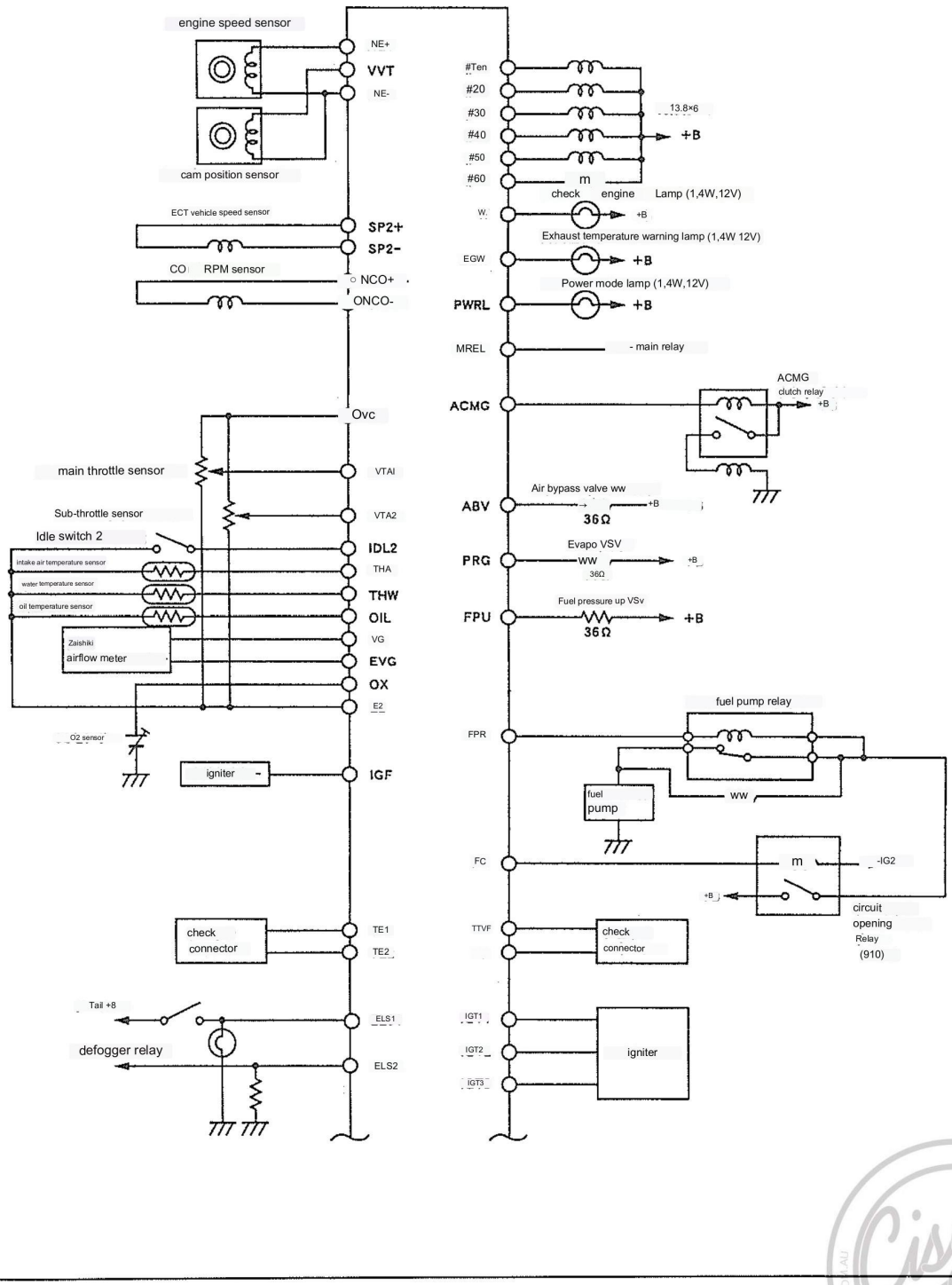
1JZ-GTE External Connection Diagram (Overview) 1/2



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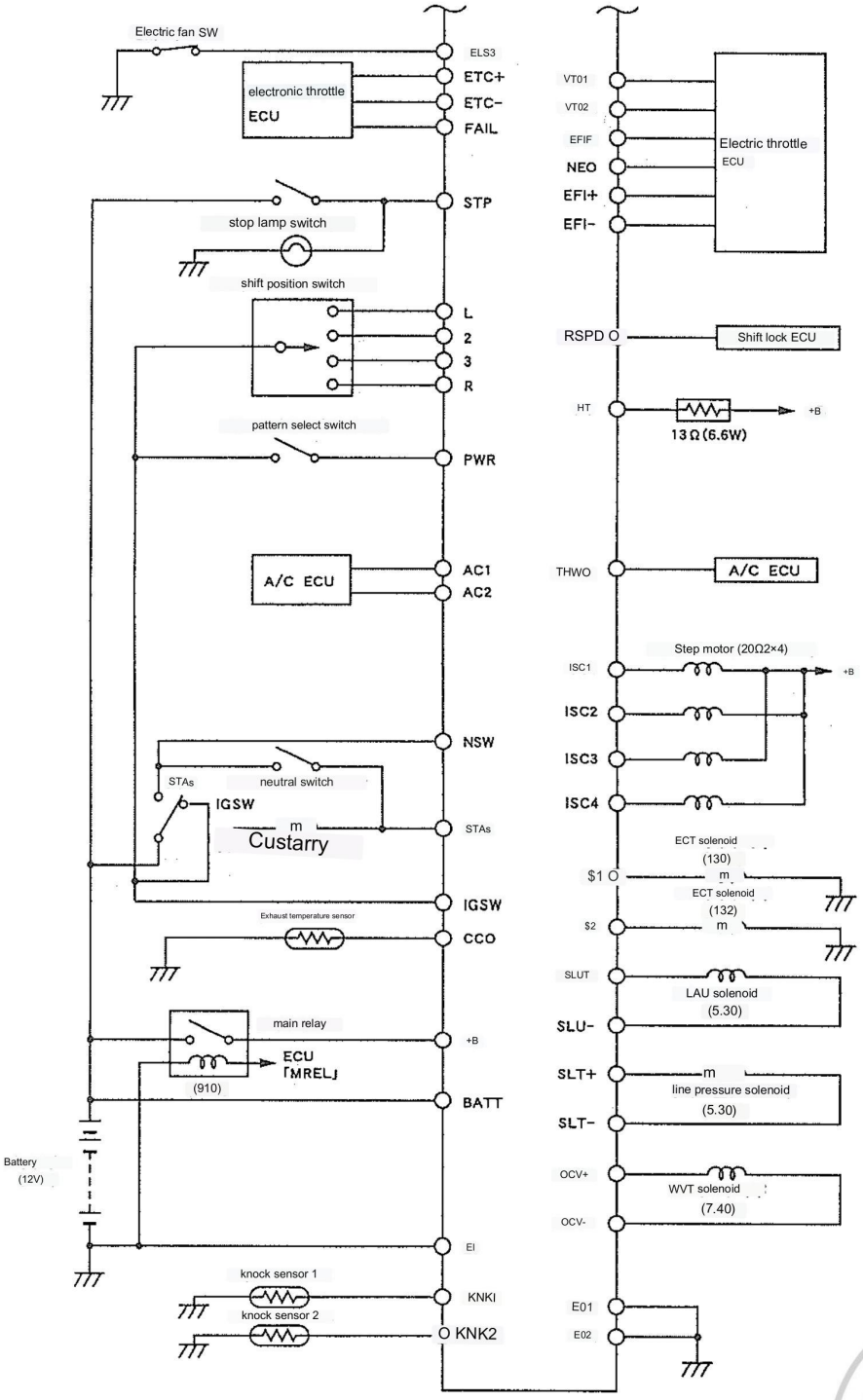
1JZ-GTE #AME (2) 2/2



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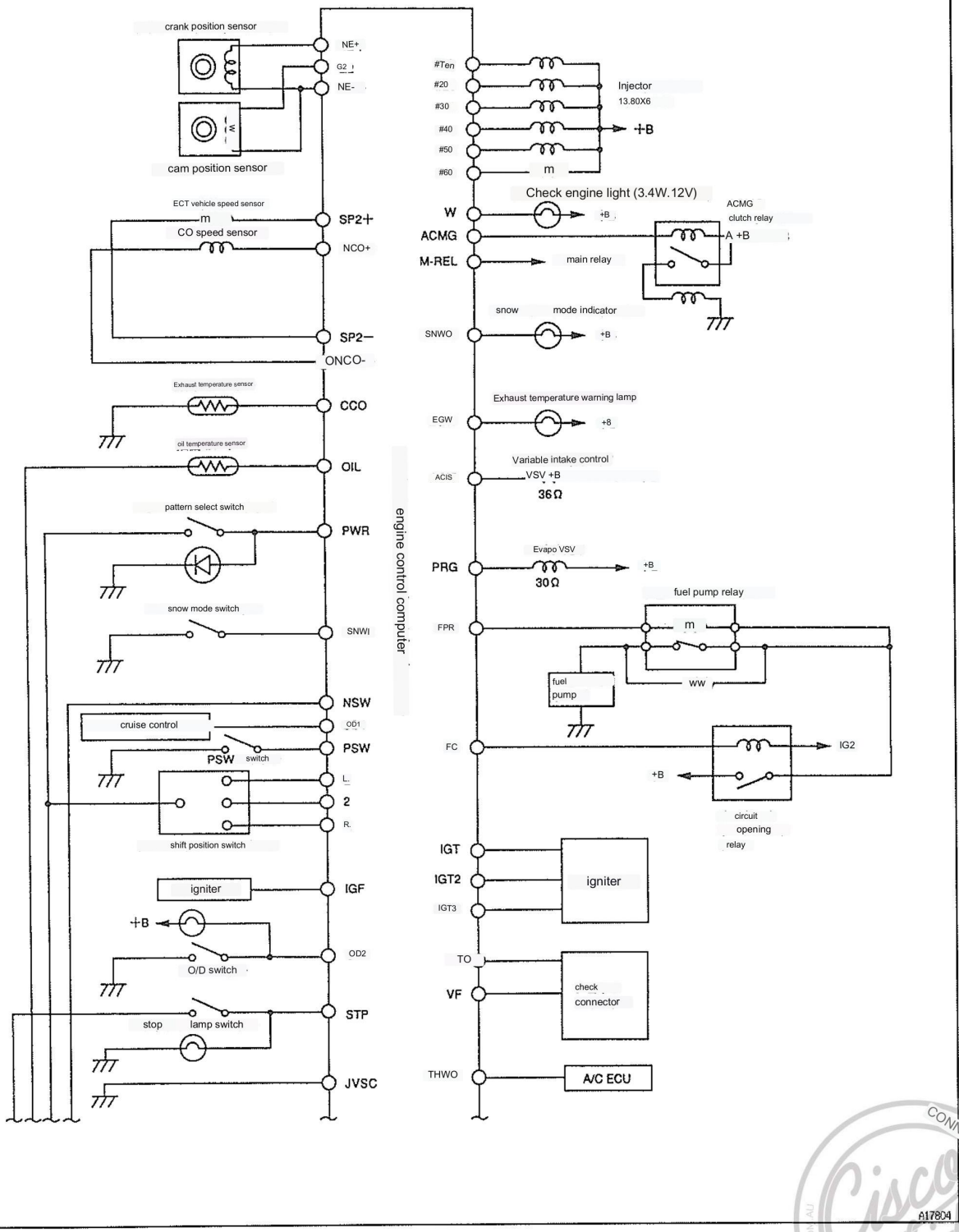
2JZ-GE External Connection Diagram (Overview) 1/2



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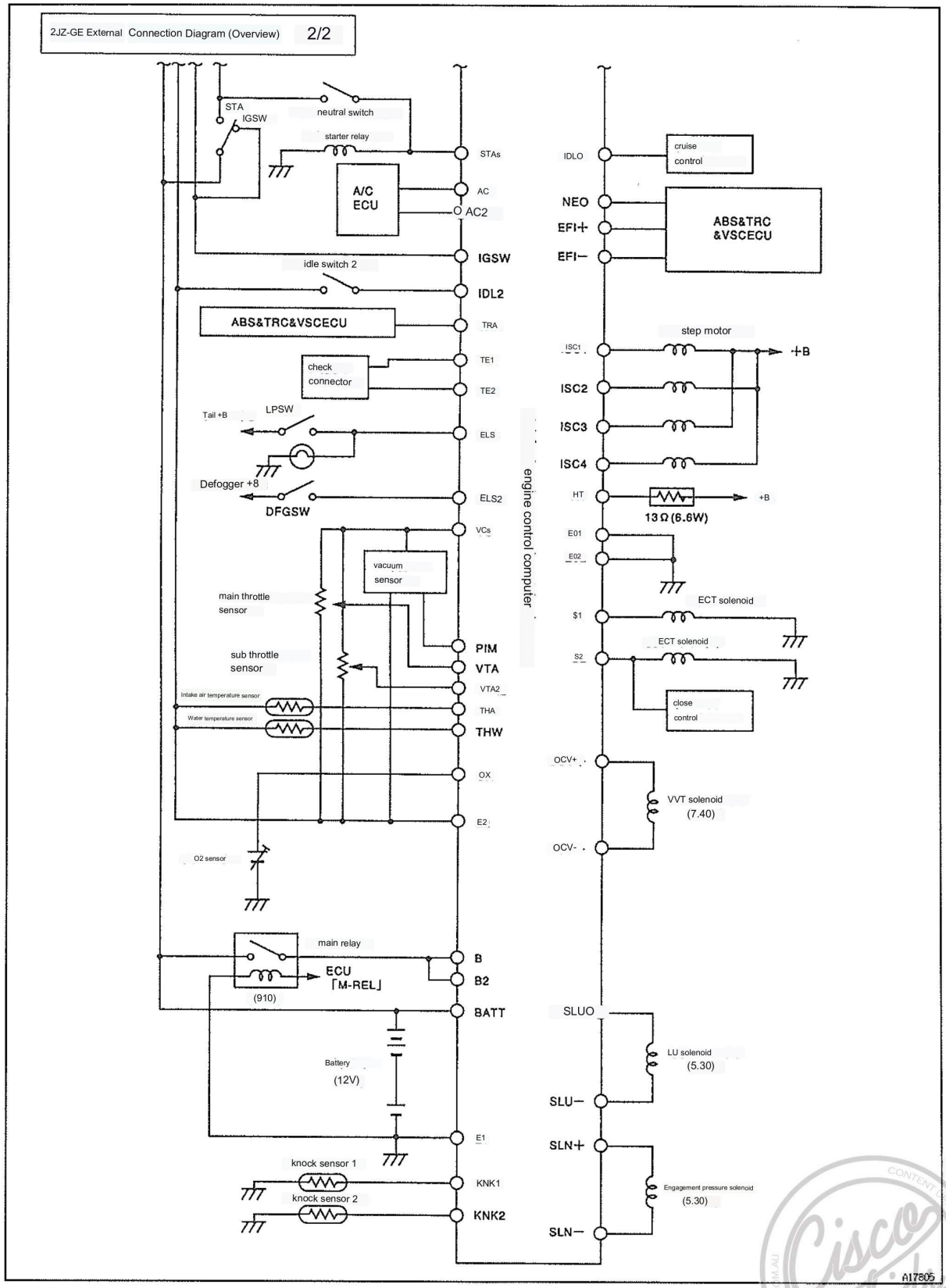

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Code number SAE	Code number lamp	Diagnosis item (Terminal symbol)	Diagnosis contents (1) Diagnosis conditions ② Abnormal state (3) Abnormal period ④Other] Normal mode	test (check) mode	lamp lighting	Memory	Main malfunction phenomenon	point
P0335	12	Rotation signal system 1 [VVT, NE]	①During cranking ② VVT and NE signals are not input ③ 5 seconds or more	←	○	○	engine stall, Restart cam position Sensor (P2-55) Impossible	· Crank position sensor (P2-55) · wire harness and connector (VVT, NE signal system) Engine control computer (P2-57)
		Rotation signal system 1 (1JZ-GE \ 2JZ-GE only, [NE-]	① During cranking ② NE-system	←				
P1335	13	Rotation signal system 2 [NE]	① Engine speed 1500r/min or more ② VVT signal is not input ③1 second or longer	(2) NE signal is other than 12 pulses between 2 pulses of G signal	×	○		· Crank position sensor (P2-55) · Wire harness and connector (NE signal system) · Engine Control Computer (P2-57)
		G, NE phase difference anomaly (VVT)	① When idling, shift position P or N range (A/T car) ② Misalignment between VVT signal and NE signal or no VVT signal input ③ 1 second or longer	←				· Wire Harness and Connector (VVT signal system) · Valve timing · engine control computer (P2-57)
P1300	system	Ignition signal 3) (IGF, IGT+3) 14 [IGT 2, IGT	① At idle rotation ② IGF signal is not input even though IGT signal is output. ③ 1 second or longer	←	○	○		① Ignition coil (P2-123) ② Wire harness and connector [igniter + B system, IGT, IGF system) \ ignition coil + B system ③ Engine control computer [P2-57 (IGT, IGF signal waveform)] * If ① and ② are normal, judge by ③ · IGT→OK : Check IGF NG: Replace ECU · IGF→OK: Replace ECU NG: Replace igniter
——	16	Sub CPU error/ 1JZ-GTE, \ 2JZ-GE only,	① IG switch ON ② Sub CPU error ③ 1 second or longer	←	○	×	Impossible to shift (only manual operation possible)	· Engine control computer
P0130	21	more O2 sensor signal system (OX)	① Engine Machine Engine Rotation speed 2500r/min or ② O2 sensor output voltage amplitude less than 20.3V ③ 60 seconds or more ④ 2 trips 1	①→②→③ same as normal	×	○	bad emission	· O2 sensor -Engine control computer (P2-57)
P0135		O2 sensor heater anomaly (HT)	① IG switch ON ② O2 sensor heater circuit disconnection ③ 1 second or longer	←			O2 sensor (P2-55)	· Defective wiring harness and connector (O2 sensor heater system) Engine control computer (P2-57)

*1 When diagnosis content ①, ②, ③ are once stored, and after IG OFF → ON, diagnosis content ①, 2, 3 are satisfied again

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code number SAE ramp terminal symbol]		Diagnosis item	Diagnosis content [1 Diagnosis condition ② Abnormal state ③ Abnormal period ④ Others] Normal mode	Test (check) mode 0	lamp lighting	Memory	Main malfunction phenomenon	Inspection part
P0115 22		Water temperature sensor signal system (THW, E2)	① IG switch ON ②Short circuit or disconnection of the water temperature sensor circuit ③ 1 second or longer	- same as normal ② ③ Less than 1 second	-	○	Poor cold startability and drivability	· Water temperature sensor (P2-53) · Wire harness and connector (Water temperature sensor signal system) Engine control computer (P2-57)
P0110	24	Intake air temperature sensor signal system [THA, E2]	① IG switch ON ②Short circuit of the intake air temperature sensor circuit. Disconnection ③ 1 second or more	① same as normal ② ③ Less than 1 second	×	○	Poor drivability	· Intake air temperature sensor (P2-53) •Wire harness and connector (intake air temperature sensor signal system) · Engine control computer (P2-57)
P0171	25	Lean Abnormal System (OX)	① After warming up the engine, Rotation speed 2500r/min or more ② O2 sensor gives a rich signal do not output ③ 90 seconds or more ④ 2 trips*1	① ② ③ same as normal	×	○	Poor initiation Idle malfunction Poor drivability Engine stall	· Ignition system (secondary system) · Spark plug (P2-4) • Ignition Coil (P2-122) • intake system · Vacuum sensor (P2-47) • Wire harness and connector (O2 sensor heater system) · Fuel system 技 • Injector (P246) · Fuel pressure check (P2-4) • Engine control computer (P2-57)
P0105	31	Vacuum sensor signal system (Excluding 1JZ-GTE) [PIM, VC, E2)	① IG switch ON ② Vacuum sensor circuit short circuit. Broken wire ③ 1 second or longer	① Same as normal ②Less than 1 second	○	○		· Vacuum sensor (P2-47) · Wire harness and connector (Vacuum sensor system) • Engine control computer (P2-57 Engine)
——		Air flow meter signal system (1JZ-GTE only) or disconnection (VG, VC, E2) ③ 3	① Engine speed less than 3000r/min ② Short circuit of air flow meter circuit seconds or more	←			stall restart impossible Air flow meter (P2-48)	· Wire harness and connector (airflow meter system) -Engine control computer (P2-57)
P0505	33	ISCV system (1JZ-GE only) (RSO, E2)	① At idle rotation ② Short circuit or disconnection of the ISCV circuit ③ 10 seconds or longer	① ② Same as normal ③ Less than 1 second	○	○	Idle malfunction (fixed at 1100r/min)	① Initial check operation inspection (P2-53) ② Engine control computer [P2-57 (RSO signal waveform)] Result of ② OK: ③ Defective NG: ECU defective (3) Wire harness and connector (ISCV system) · Engine control computer (P2-57)
P1656 1.AU	39	VVT signal system [OCV]	① IG switch ON ② OCV circuit short circuit or disconnection ③ 1 second	←	-	○	Insufficient output at high speed	· Camshaft timing oil control roll valve · Wire harnesses and connectors (camshaft timing oil (control oil) -Engine control computer (P2-57) * +B2 voltage check
P0120	41	Throttle position Sensor signal system (VC, VTA, E2) ③ 1	① IG switch ON ② Throttle position sensor short circuit, open circuit second or longer	① ② - Same as normal ③ Less than 1 second	×	○	Defective shift point Engine stall	· Wire harness and connector (throttle sensor system) · Throttle position sensor (P2-49) -Engine control computer (P2-57)

*1 When diagnosis content ①, 2, and 3 are once stored, and after IG OFF ON, diagnosis content ① ② ③ is established again.

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code number SAE	code number lamp	Diagnosis item [Terminal symbol]	Diagnosis contents ① Diagnosis condition Normal mode	(2) Abnormal state (3) Abnormal period] Test (check) mode	lamp lighting	Memory	Main malfunction phenomenon	point site
P0500	42	speed sensor Signal system (SP 2)	① When the vehicle is running, shift position P, N other than range ② Speed sensor signal is not input. ③ 1 second or longer	② During test mode, Diagnose The speed sensor signal 端 is not input until the sys connector TE1E1 pins are shorted	○	○	Defective shift point	★Speed sensor (P6-35) · Wire harness and connector (speed sensor system) -Engine control computer (P2-57)
P1400	47	sub throttle position sensor signal system (VTA2, VC, E2)	① IG switch ON ② Short circuit or disconnection of the sub-throttle position sensor circuit ③ 1 second or more	① IG switch ON ② Short circuit or disconnection of the sub-throttle position sensor circuit ③ Less than 1 second	×	○	——	· Sub throttle position sensor · Wire harness and connector (sub-throttle position sensor system) Engine control computer (P2-57)
P0325	52	Knock sensor signal system [KNK1)	① After engine warfare. engine revs 数 When running at 1800-5000 (2000-6000)* r/min ② Knock sensor circuit short circuit or disconnection ③ 5 (10)* seconds or longer	←	○	○	Knocking level deterioration	Knock sensor (front side) · Knock sensor (front side) improper tightening · Wire harness and connector (knock sensor (front side) system · Engine control computer (P2-57)
P1605	53	Knock control CPU System (1JZ-GTE, 2JZ-GE)	(1) Engine speed 500~6000r/min (2) Knock control CPU system failure only) (3) 1 second or longer	←	○	×		•Engine control computer
P0330	55	Knock sensor signal system (KNK 2)	① After engine machine, engine 数 speed 1800-5000 (2000-6000)* r/min ② Knock sensor circuit short circuit or disconnection ③ 5 (10) seconds or more	←	○	○		• Knock sensor (rear) · Knock sensor (rear side) improper tightening •Wire harness and connector [Knock sensor (rear) • system] Engine control computer (P257)
P1349	59	VVT-i signal system 2	① Engine speed 500~4000r/min, Cooling water temperature 80~110°C (2) Target valve timing cannot be controlled to ±5°C, or the actual valve timing is fixed and cannot be varied. ③ 5 seconds or more	←	×	○	Rough idle Poor drivability	Procedure 1
P1635	72	Variable capacity A/C fault [ACTQ]	(1) After engine start, A/C ON (2) A/C torque signal fixed at Lo or Hi ③ 5 seconds or more	←	×	○	——	· Wire harness and connector (A/C system) A/C amplifier · A/C compressor Engine control computer (P2-57)
——	78	fuel pump Relay System / 1JZ-GTE, 2JZ-GE のみ (FPR)	① IG switch ON ② Short circuit of fuel pump circuit Or disconnection ③ 1 second or longer	←	×	○	Cannot start engine	· Fuel pump relay · Wire harness and connector (fuel pump relay system) -Engine control computer (P2-57)

*( ) is 1JZ-GTE

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2

Procedure 1

Inspection procedure when diagnostic code 59 is output

After confirming that there is no diagnostic code 39 output, this chart Please follow

After completing the inspection work, remove the battery and be sure to erase the diagnosis code.

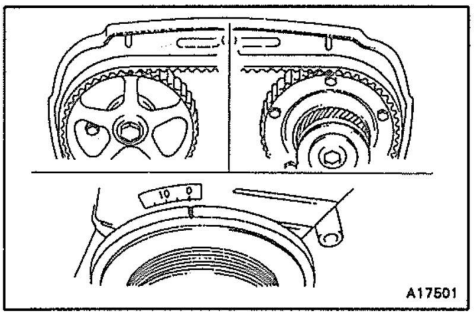
Remove the timing belt cover No.3

Align the notch of the crankshaft pulley with the 0° position and align it with No. 1 cylinder compression top dead center.

OK

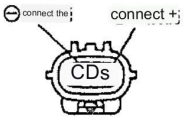
NG

timing correction



Start the engine and disconnect the oil control valve (OCV) connector

Apply battery voltage to the terminal of the oil control valve (OCV).



Rough idle or engine stall

YES

NO

(1) Turn off the IG switch (2) Oil control valve (OCV) connector Note: If you make a mistake in the order, it will be misjudged in subsequent inspections, so if you make a mistake, start over from (1).

⑤ Start the engine

Computer output check (OCV+OCV-) ("EFI system" - see "Engine Control Computer")

NG

OK

Normal (If there is rough idle, etc., factors other than the VVT system)

Bad engine control computer

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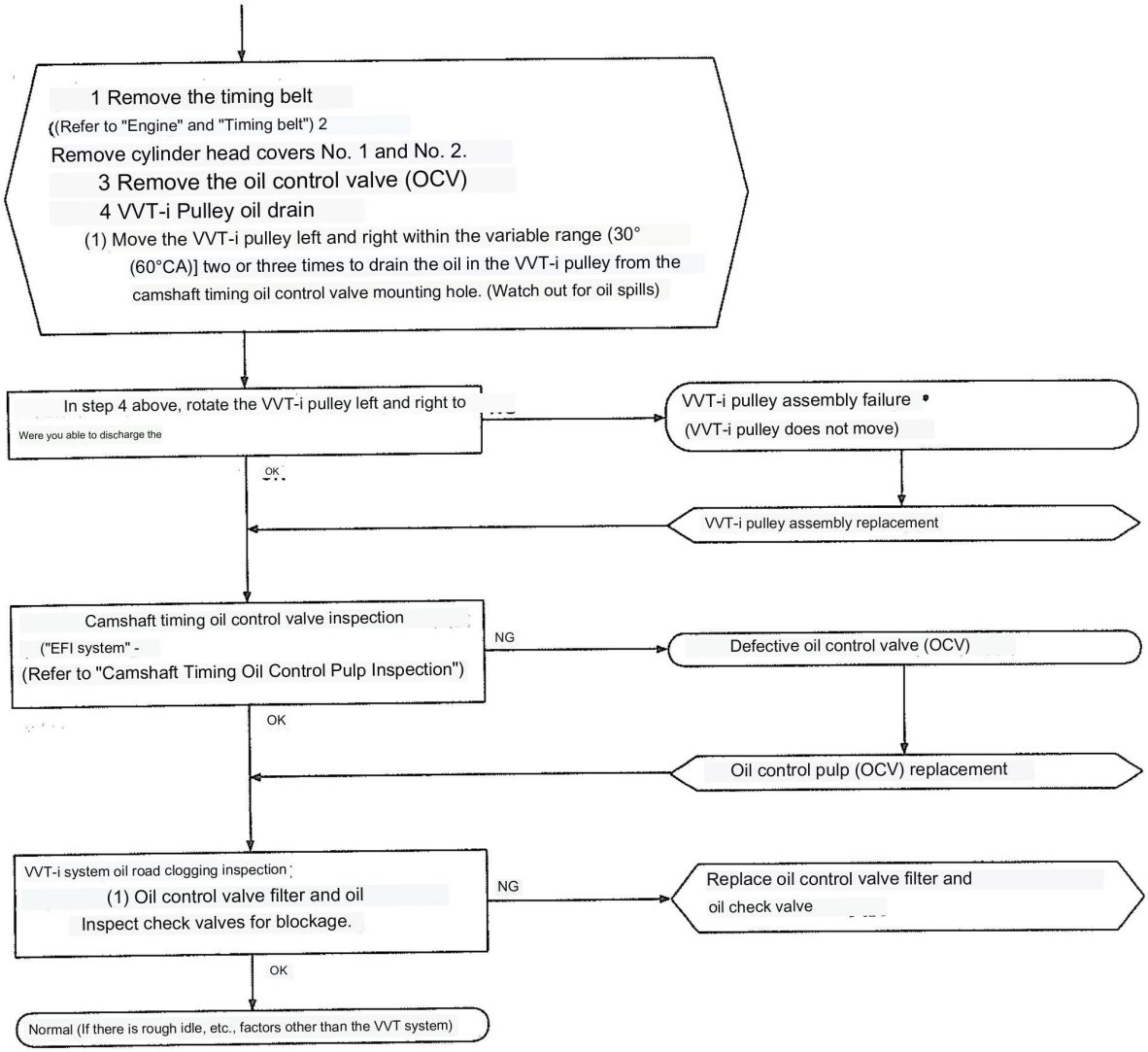

* When removing the straight screw plug to replace the VVT-pulley ASSY, be careful of oil dripping as the oil in the VVT-i pulley has not been drained.

<Reference> Diag code 59 is also output when the engine returns to normal in a short period of time due to foreign matter getting caught in the engine oil. In this case, the engine control computer is controlled to eject foreign matter, so there is no problem with VVT-i. In addition, there is no problem because foreign matter inside the engine is captured by the oil filter.

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times recollection

Unit inspection

注意 In the text, "cold time" and "warm time" represent the temperature of the parts to be inspected. In addition, the temperature setting range can be set between cold (-10 to 50°C) and warm (50 to 50°C). 100°C).

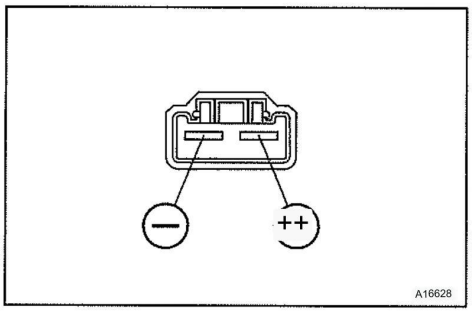
2

fuel pump

1 Resistance check

(1) Using a Toyota Electrical Tester, measure the resistance between terminals. set.

Reference value 0.2~3.0 Ω



2 Operation check

(1) Apply the battery voltage across the pump terminals of the connector, Note · Make sure the motor rotates.

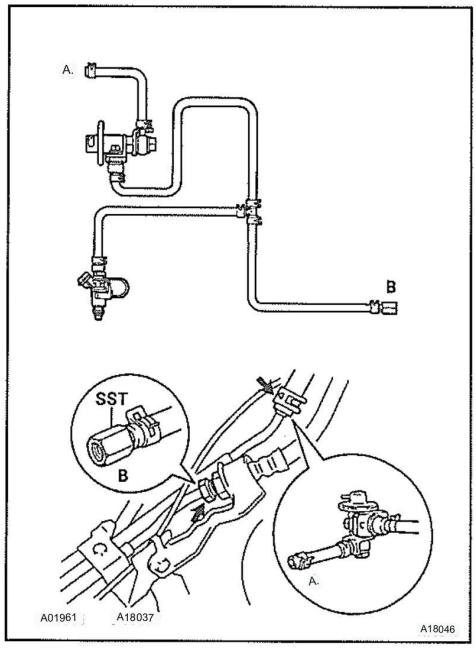
注意 the inspection in a short period of time (10 seconds
· or less). Keep the pump as far away from the battery as possible.· The switching action must be performed on the battery side.

injector

1 resistance check

(1) Measure the resistance between the terminals using a Toyota Electrical Tester. set.

reference signal 13.4~14.2Ω (20℃)



2 Fuel injection amount and leak check

注意 Carry out the inspection in a well-ventilated place with caution against fire. (1) Install SST on pressure regulator and injector. attach. (Excluding 1JZ-GTE)

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Note O-rings and grommets on injectors Attach the SST with the

(2) Connect SST to the fuel main pipe and fuel return hose in the state of (1). (Excluding 1JZ-GTE)

(3) Attach the EFI inspection wire F to the injector connector. (excluding 1JZ-GTE)

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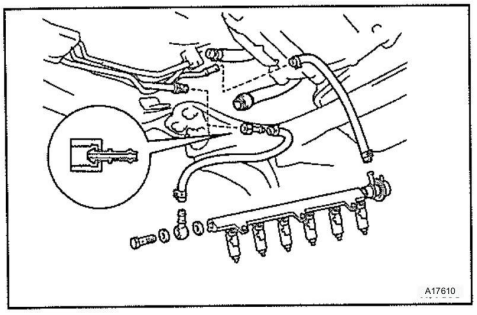

(4) Install SST on the fuel main pipe, fuel return pipe and delivery pipe. (1JZ-GTE) SST

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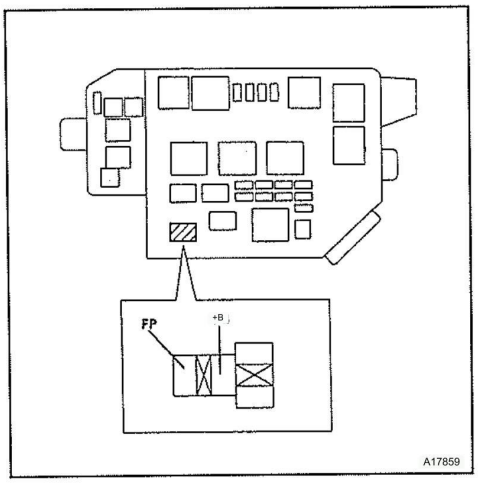
Caution Use a new gasket.

2



(5) Remove the circuit opening relay in the engine room J/B. Remove it and short the F+B terminals on the J/B

Note Never place the short-circuit in the wrong position, as it may cause a malfunction.

(6) Turn on the ignition switch and operate the fuel pump.

注意 Engine will not start.

(7) Attach a vinyl tube to the tip of the injector.

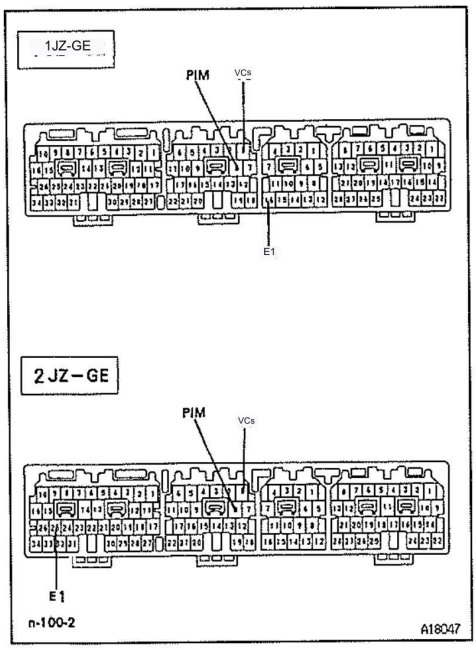
(8) Place the graduated cylinder on top of the injector.

(9) Connect EFI inspection wire F to battery ; and the injection amount to measure.

Standard volume 56~70mL/15 seconds (1JZ-GE)
85~105mL/15 seconds (1JZ-GTE)
69~88mL/15 seconds (2JZ-GE)

(10) Remove the EFI inspection wire from the battery and check for leaks from the nozzle. Standard value

1 drop or less/1 minute



Vacuum sensor (except 1JZ-GTE)

1 Output voltage check

(1) Turn on the ignition switch with the engine stopped. (2) Measure the voltage between the VCE1 terminals using a Toyota electrical tester and mini test leads.

Reference value 4.5~5.5V

注意 With the connector still connected to the computer, Inspect from the back side.

(3) Remove the vacuum hose of the vacuum sensor and measure the voltage between the PIM E1 terminals with the air open.

Standard value
3.3~3.9V (4) 27kPa {200
Measure the voltage when a negative pressure of mmHg) is applied.
standard 0.6 to 1.0V drop from the measured value of (3)

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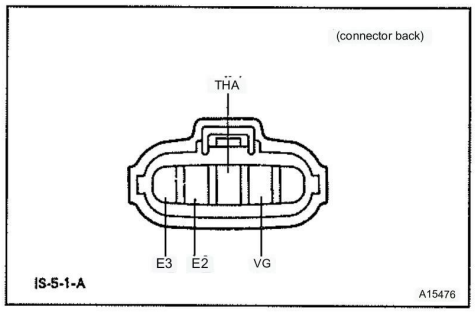


Airflow meter (1JZ-GTE)

1 Intake air temperature sensor resistance check

(1) Using a Toyota Electric Cam Tester, between the THA E2 terminals

Measure the resistance of

Standard value

Ambient temperature [°C]	Resistance value [kΩ]
-20	10~20
0	4~7
20	2~3
40	0.9~1.3
60	0.4~0.7

2 Output voltage check

(1) Turn on the ignition switch.

(2) When blowing air into the airflow meter, between the VG E3 terminals

voltage changes.

standard voltage rises

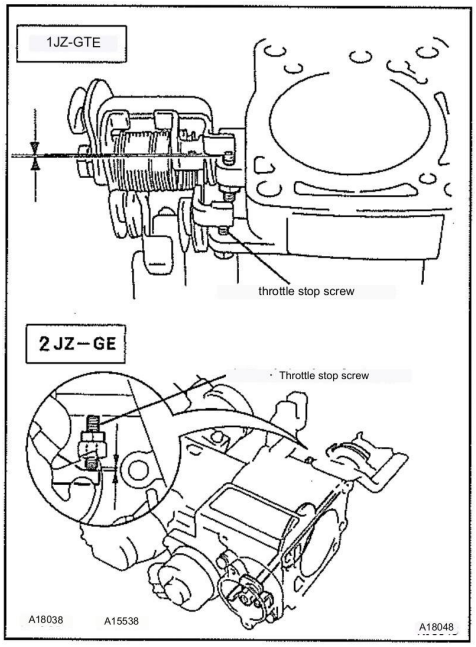
throttle body

1 Throttle body inspection

(1) Confirm that there is no looseness in the throttle valve

shaft. (2) Make sure that each port is not clogged.

(3) Confirm that the throttle valve opens and closes smoothly.



2 Inspection of the main throttle stop screw (except 1JZ-GE)

(1) With the main throttle valve fully closed, inspect the clearance

between the throttle stop screw and the throttle lever.

Criteria No gaps

Adjust if out of range.

•Note The throttle stop screw is precisely adjusted, so

do not adjust it unless necessary.

3 Main throttle stop screw clearance adjustment

(Excluding 1JZ-GE)

(1) Loosen the lock nut of the throttle stop screw and

Loosen until the crown does not touch the lever.

(2) Confirm that the main throttle valve is fully closed.

(3) Tighten the throttle stop screw so that the screw

After touching , lock it with a tightening nut for 1/4 turn.

(4) Apply yellow paint to the nut and seal it.

(5) Check and adjust the main throttle position sensor.

times home visit
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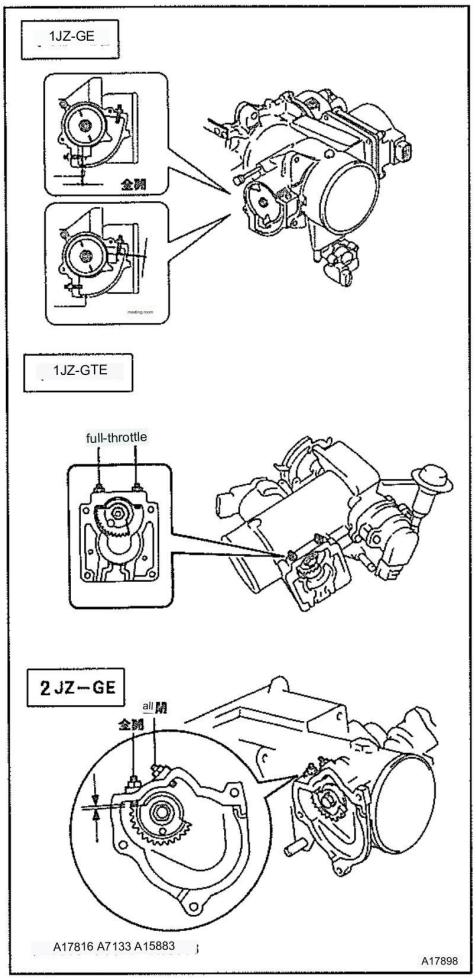


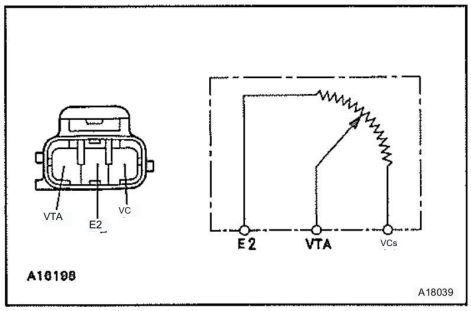
4 Sub-throttle stop screw inspection (1)

Remove the throttle valve motor and inspect the clearance between the throttle stop screw and the throttle valve gear at the fully open and fully closed positions of the sub-throttle valve.

Criteria No gaps

If it is out of the standard, replace the throttle body. (Caution Because the throttle stop screw is strictly adjusted, Never make any adjustments.

2



main throttle position sensor

1JZ-GE, 1JZ-GTE

1 Check resistance between VC E2 terminals

(1) Using a Toyota Electrical Tester, measure the resistance between the VCE2 terminals. Reference

value 2.8~5.4kΩ

2 Check resistance between VTA E2 terminals

(1) VTA E2 terminal when the throttle lever is moved from fully closed to fully open

Measure the change in resistance between

Standard The resistance increases proportionally as the throttle lever is opened. (*)

Resistance when throttle lever is fully closed 0.2~5.9k Ω

Resistance when throttle lever is fully open 2.3~8.5k Ω

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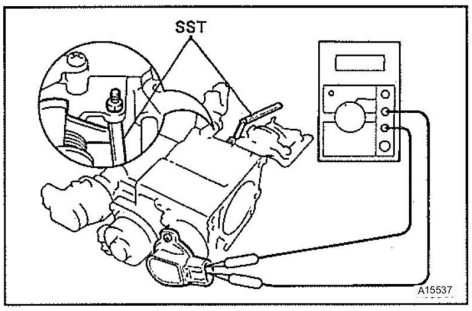

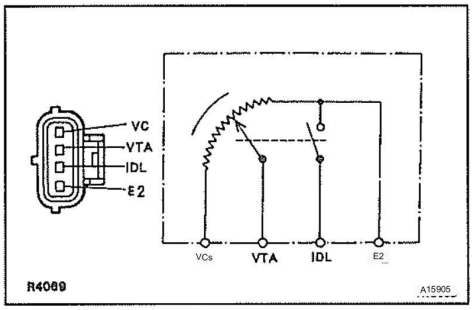

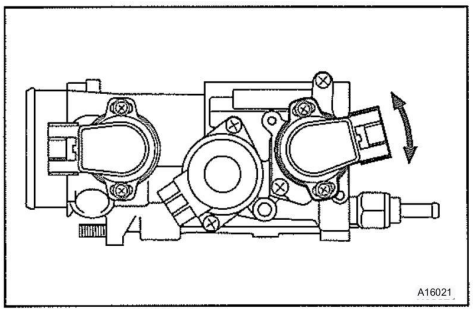

2 JZ－GE

1 Continuity check between IDLE2 terminals

(1) Insert the SST between the throttle lever and the stop screw and use a Toyota electrical tester to check the continuity between the IDL E2 terminals.

Check for the presence of

S S T 09203-00020

standard 0.40mm continuity

0.55mm No continuity

Adjust if out of standard.

2 Check resistance between VCE2 terminals

(1) Using a Toyota Electrical Tester, measure the resistance between the VCE2 terminals. Standard

value 3.1~7.2kΩ

3 Check resistance between VTA E2 terminals

(1) VTA E2 terminal when the throttle lever is moved from fully closed to fully open

Measure the change in resistance between

Criteria Resistance increases proportionally with the opening of the throttle lever

<Reference> Resistance when throttle lever is fully open 0.3~6.3kΩ

Resistance when throttle lever is fully open 2.4~11.2kΩ

4 Main throttle position sensor adjustment

(1) Loosen the sensor mounting screw and temporarily attach it.

(2) Install SST between throttle stop screw and throttle lever.

Check that there is continuity between the scissors and the IDL E2 terminal.

S ST 09203-00020 (thickness 0.50mm)

<Reference> If there is no conduction between the IDLE2 terminals, the sensor continues until there is continuity.

slowly turn left. (3) Slowly rotate

the sensor to the right until there is no continuity between the IDLE2 terminals.

Fully tighten the sensor at the position of the moment.

(4) Inspect 1-(1).

(5) Apply yellow paint to the sensor mounting screw and seal it.

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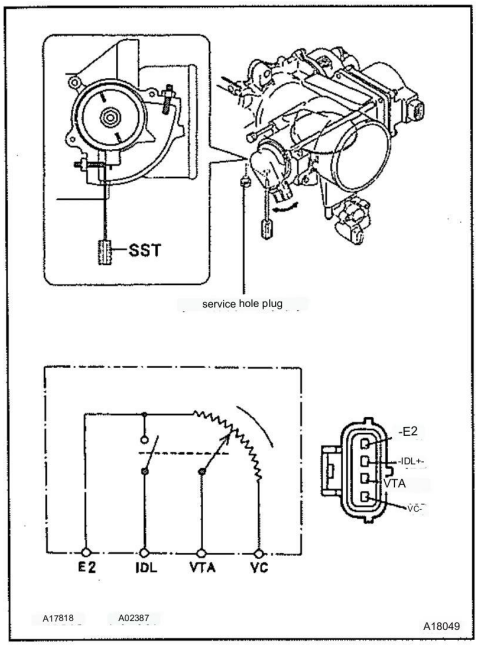

sub throttle position sensor

1JZ-GE

1 Check resistance between IDL E2 terminals

(1) Remove the service hole plug.

(2) Place the SST in the position shown in the diagram (between throttle lever and stop screw).

to confirm continuity between the IDL E2 terminals.

SST 09242-00090 09242-00110

Standard 0.9mm continuity

1.1mm no continuity

If it is out of the standard value, adjust it.

(3) Install the service hole plug.

2 Checking the resistance between

the VCE2 terminals (1) Using a Toyota electrical tester, measure the resistance

between the VCE2 terminals.

Standard value 2.85~5.35kΩ

3 Check resistance between VTAE2 terminals

(1) VTA E2 when the sub-throttle valve is changed from fully open to fully closed

Measure the resistance between the terminals.

Criteria Resistance decreases proportionally with the opening of the sub-throttle valve.

thing

<Reference> Resistance when the sub-throttle valve is fully open 2.7~8.5kΩ

Resistance when the sub-throttle valve is fully closed 0.2~5.7kΩ

4 Sub-throttle position sensor adjustment

(1) Remove the service hole plug.

(2) Loosen the sensor mounting screw to temporarily attach it.

(3) Fully open the sub-throttle valve and position it in the position shown in the diagram (throttle

between the bar and the stop screw) and insert the IDLE2 terminal

Make sure there is continuity between them.

SST 09242-00100 (Thickness 1.0mm) <Reference>

If there is no continuity between the IDL E2 terminals, the sensor continues until there is continuity.

to the left.

(4) Rotate the sensor clockwise slowly until there is no continuity between the IDL and E2 terminals.

Tighten the sensor at the position of the instant. (5)

Carry out the inspection work of 1-(1).

(6)Apply yellow paint to the sensor mounting and seal it.

screw (7)Install the service hole plug.

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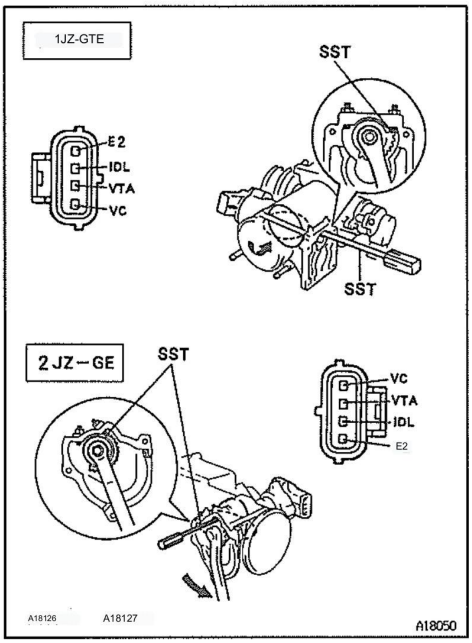

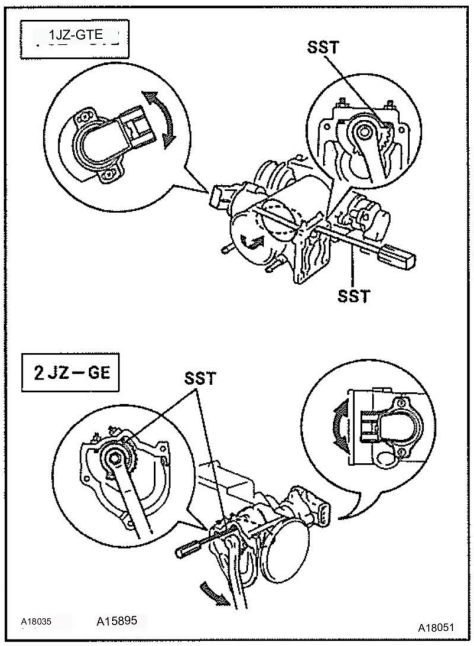

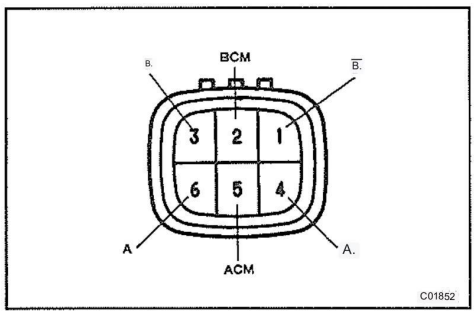

1JZ-GTE, 2JZ-GE

1 Resistance check between IDLE2 terminals

(1) Set the sub-throttle valve to the fully closed state as shown in the figure, insert the SST in the position shown in the figure, and check for continuity between the IDL E2 terminals.

be.

SST	09242-00030	09242-00050
Standard	0.30mm Continuity	
	0.50mm no continuity	

Adjust if out of range.

2 Check resistance between VCE2 terminals

(1) Using Toyota electrical tester, reference value between VCE2

Measure the resistance.

terminals 2.8~5.4kΩ

3 Check resistance between VTAE2 terminals

(1) VTA E2 when the sub-throttle valve is changed from fully open to fully closed

Measure the resistance between the terminals.

Criteria Resistance should decrease proportionally with the opening of the sub-throttle valve.

〈参考〉 Resistance when the sub-throttle valve is fully open 2.7~8.5kΩ

Resistance when the sub-throttle valve is fully closed 0.2~5.7kΩ

4 Sub-throttle position sensor adjustment

(1) Loosen the sensor mounting screw to temporarily attach it. (2) Fully close the sub-throttle valve and insert the SST in the position shown in the figure.

Check that there is a conductive path between the IDLE2 terminals.

SST 09242-00040 (Thickness 0.40mm) If

〈参考〉 there is no continuity between the IDLE2 terminals, sensor until there is continuity to the left.

(3) Slowly rotate the sensor to the right until there is no continuity between the IDLE2 terminals.

Tighten the sensor at the position of the instant.

(4) Carry out the inspection work of 1-(1).

(5) Apply yellow paint to the sensor mounting screw and seal it.

throttle valve motor

1 resistance check

(1) Using a Toyota Electrical Tester, measure the resistance between each terminal.

Measure.

Standard value	0.5~1Ω between terminals 54 and 6
	0.5~1Ω between terminals 21 and 3

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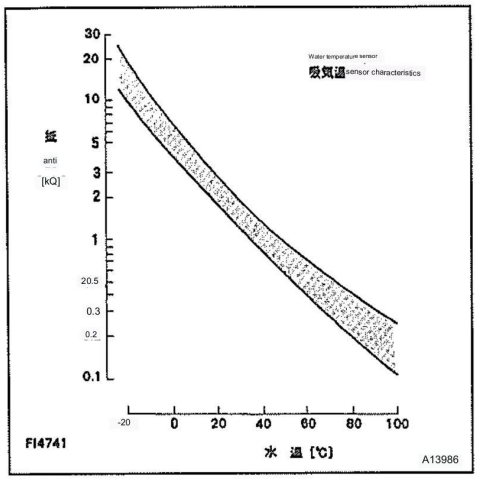

Intake air temperature sensor (except 1JZ-GTE) and water temperature sensor

1 resistance check

(1) Using a Toyota Electrical Tester, measure the resistance between the terminals.

set.

Standard value 2～3 kΩ

0.2～0.4 kΩ

注意 Do not immerse in water more than 25 mm from the tip of the sensor.

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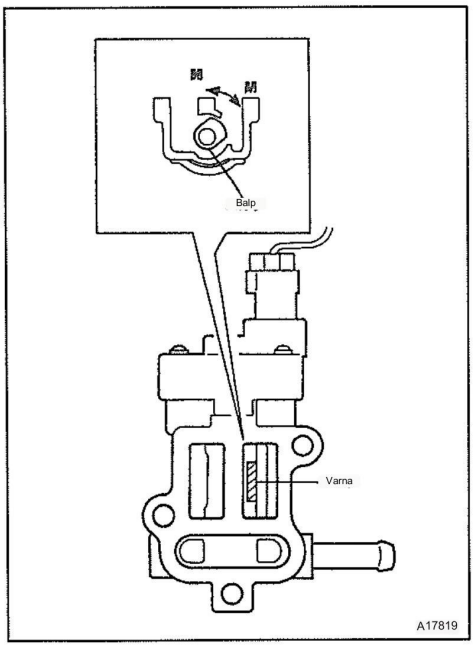

ISCV

1JZ-GE : Rotary Solenoid

注意 · Built-in IC circuit in ISCV to receive duty signal from ECU

Since it is converted into a drive signal, it is not possible to check the resistance and operation by itself. · Diagnosis code "33" when ISCV is defective (excluding sticking) is detected.

1 Operation check (initial check)

(1) Check the operation of the valve when the ignition switch is ON. Standard

Neutral (50%) → Fully closed → Fully open → Neutral (50%)

〈参考〉 · Engine speed at neutral (50% open): 1100r/min

· It operates within 0.5 seconds.

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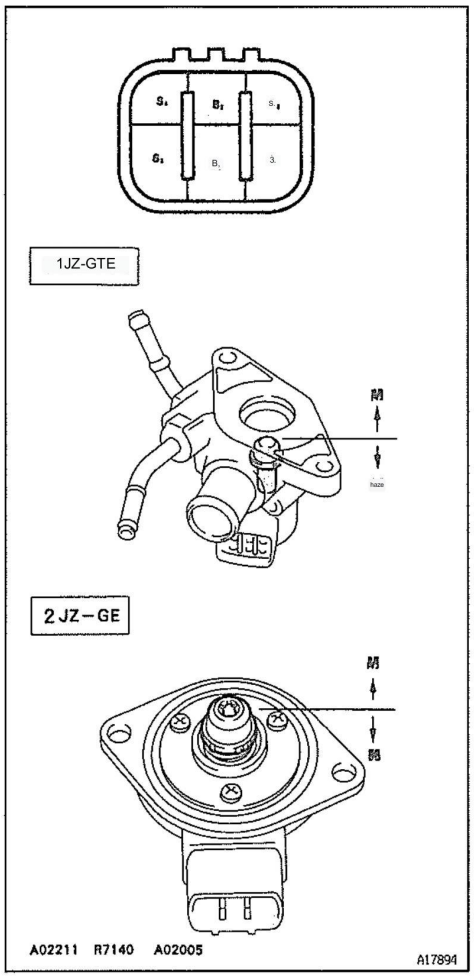


1JZ-GTE, 2JZ-GE: step motor

1 resistance check

	measuring station	Cold [Ω]	Warm [Ω]
1JZ-GTE	B1 S1, S3	31~61	38~71
	B2↔S2, S4	31-61	38-71
2JZ-GE	B1 S1, S3	15~25	20-30
	B2↔S2, S4	15~25	20~30

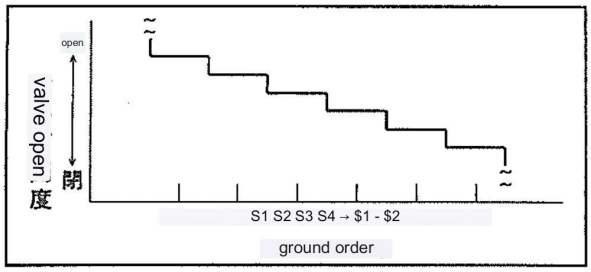
JB3485

2 Operation check

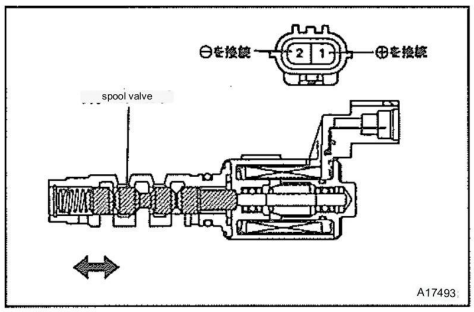
(1) Connect the battery to the B1 and B2 terminals.

(2) The valve opening changes when S1S4 and ground are operated.

to inspect.



JB3320



Oil control valve (OCV)

1 Operation check

(1) Apply battery voltage across the terminals and check that the spool valve operates.

2 terminal resistance

(1) Using a Toyota Electrical Tester, measure the resistance between terminals.

Standard value 5.5~120

Check fuel pump resistor (except 1JZ-GE)

1 Resistance check

(1) Using a Toyota Electrical Tester, measure the resistance between the terminals.

set.

Standard value 0.71~0.750

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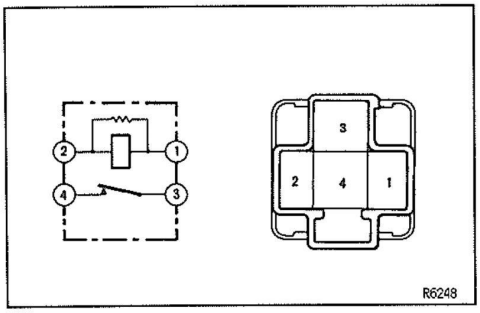


Fuel pump relay (except 1JZ-GE)

1 Resistance and continuity check

(1) Using a Toyota Electrical Tester, measure the resistance between each terminal.

Measure.

Criteria □ 63~91Ω between 12 terminals

0Ω between 34 terminals

(2) Apply the battery voltage between the 12 terminals and check for continuity between the 34 terminals.

Huaji ; no lead

cam position sensor

1 resistance check

(1) Using a Toyota Electrical Tester, measure the

set.

resistance 値 835～1400Ω（冷間時 *）

between terminals.

crank position sensor

1 Resistance check

(1) Using a Toyota Electrical Tester, measure the resistance between terminals.

set.

Standard value 1630~27400 (*)

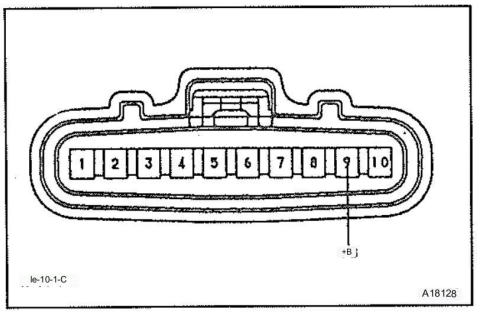
2065~3225Ω (when warm)

igniter

CAUTION · The igniter cannot be inspected individually.

· Diagnosis code “14” will appear when the igniter is defective.

Forced.



1 Input voltage check

(1) Disconnect the igniter connector.

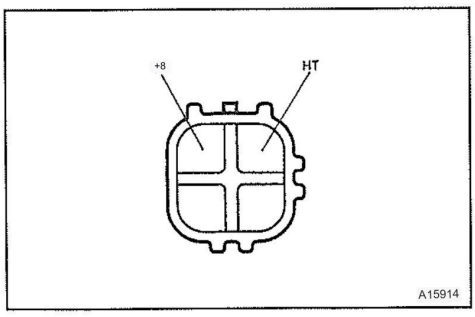
(2) Turn on the ignition switch. (3) Measure the

voltage between the +B terminal of the wire harness side connector and ground.

set.

Standard value 10~14V

(4) Connect the connector.



O2 sensor (heater)

1 Resistance

check (1) Using a Toyota electrical tester, measure the resistance between

the +BHT terminals.

Reference value 11~16Ω (normal temperature)

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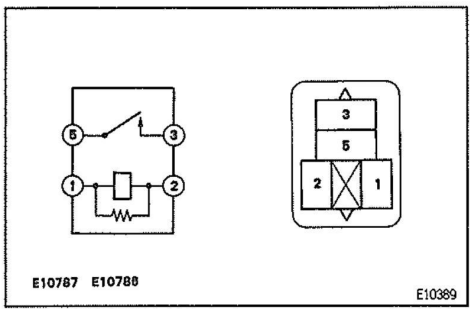


EF main relay and circuit opening relay

1 Resistance and continuity check

(1) Using a Toyota Electrical Tester, measure the resistance between each terminal.

Measure.

Standard value	Between 12 terminals	74~1180
	35 terminals 間	10 MΩ or more

(2) There is a reference between 35 terminals when battery voltage is applied between 12 terminals. Check for continuity.

Exhaust temperature sensor

1 Resistance check

(1) Place the flame about 40 mm from the tip of the sensor on a gas stove, etc. heat until red hot.

(2) Turn off the gas stove and measure the resistance between the connector terminals.

注意 The red-ripened sensor does not return to room temperature until about 15 minutes or more have passed. so I can't touch it.

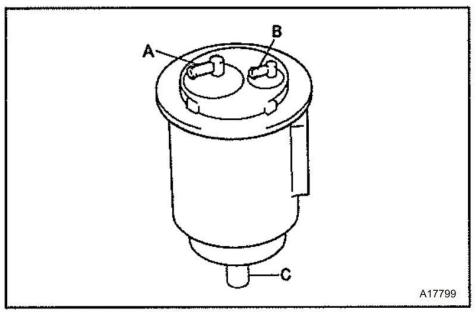
standard	Resistance increases over time
〈参考〉	0.38 ~ 0.48kΩ (900℃), 100kΩ or more (room temperature)

VSV (for canister purge)

1 Ventilation check

(1) Apply battery voltage across the terminals and check for ventilation.

基	Related	When energized	With ventilation
			No ventilation when not energized



canister

1 Ventilation check

Examination procedure	group Associate
Apply mighty negative pressure to B port in a pack	be well ventilated
Hold the B port with your finger and blow air through the A port.	Ventilation from C port
Breathe out of the A-Boat	Ventilation from B port and C port to be

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engine control computer

1 computer operation check

(1) Connect the mini test leads to the Toyota Electrical Tester,
Measure the voltage across each terminal.

注意 · When the connector is connected to the computer,
Inspect from behind.
· Before measurement, check the power supply (10 to 14V when IG is ON) and check the ground
(5Ω or less between IG OFF ground terminal engine and body)
implement.

(2) Using an oscilloscope, a pulse is generated between each terminal.
Confirm that

2

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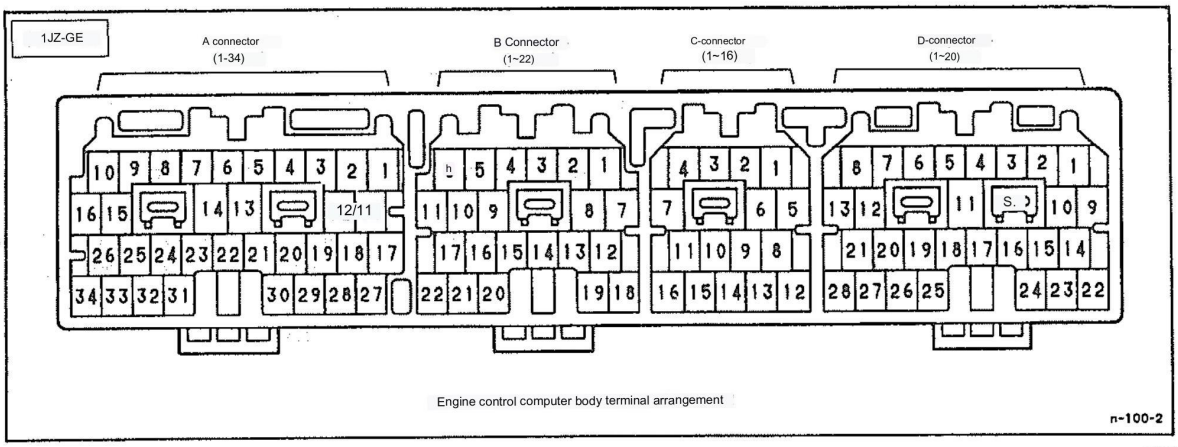

JB3690

Terminal No.	Terminal name	Terminal No.	Terminal name	Terminal No.	Terminal name	Terminal No.	Terminal name	Terminal No.	Terminal name	Terminal No	Terminal name
A−1		A−23	RSO	B−1	VCs	C−1	NEO*2	D−1	RSPD**	D−22	+B
2		24	IGT1	2		2	PRG	2	L.	23	
3		25		3	NCO-2	3	W.	3	PWR	24	
4	SLU−*2	26		4	SP2−*2	4	TRA	4		25	STP
5	#60	27	SL*1	5	NE+	5	TC	5	ACMG	26	THWO
6	#50	28	SLU+*2	6	NE-	6		6	OD 2**	27	ELS2
7	#40	29	KNK2	7	VTA1	7	EF+		PWRL*3	28	ELS1
8	#30	30	KNK 1	8	PIM	8	HT	7	OD 15		
9	#20	31	IDL2*2	9	SP2+*2	9	ACIS	8	EGW		
10	#Ten	32		10	VVT	10	FC	9			
11	$1	33	E02	11	IDLO'S	11	EFI−	10	2		
12	IGF	34	E01	12	VTA2*2	12	CCO	11			
13	STAs			13	OX	13	SNWO*2	12	SP2*1		
14	NSW			14		14	SNW1 *2	13			
15	OCV-			15	NCO+2	15	PSW*2	14	BATT		
16	OCV+			16	IGT3	16	E1	15			
17	$2			17	IGT2			16			
18				18	OIL*2			17	R.		
19				19				18	3*3		
20				20	THW			19	AC2		
21				21	THA			20	AC 1		
22				22	E2			21	SIL		

*1 · · · 4WD vehicles only *2< 4WD *3···Only for gate-type shift vehicles *4 · · · excludes gate-type shift vehicles

*5 · · · Excluding 4WD vehicles and gate-type shift vehicles

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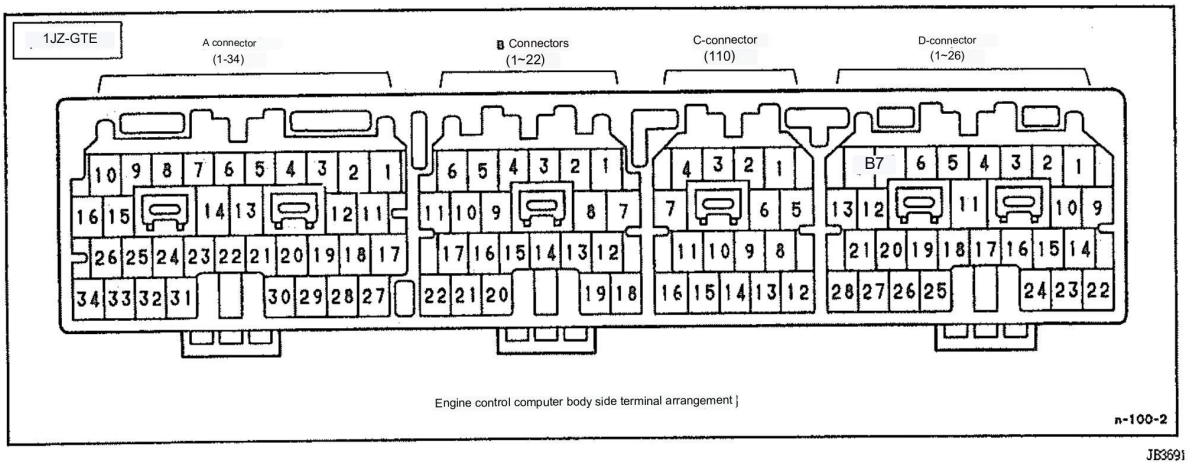

JB3691

Terminal No.	Terminal name	Terminal No.	Terminal name	Terminal No.	Terminal name	Terminal No.	Terminal name	Terminal No.	Terminal name	Terminal No.	Terminal name
A－1	SLT＋*2	A－23	ISC 1	B－1	VCs	C－1	NEO	D－1	TT*2	D－23	
2	SLT－*2	24	IGT 1	2		2	MREL	2	L*2	24	R*2
3	VTO 1	25	E1	3	NCO-□2	3	W	3	PWR*2	25	STP
4	SLU－*2	26	EVG	4	SP2－*2	4	FPR	4		26	THWO
5	#60	27	ETC－	5	NE+	5	TE 1	5	ACMG	27	ELS 3
6	#50	28	SLU＋*2	6	NE-	6		6	PWRL*2	28	ELS1
7	#40	29	KNK2	7	VTA 1	7	EFI＋	7			
8	#30	30	KNK 1	8	VG	8	FPU	8	EGW		
9	#20	31	IDL 2	9	SP2＋*2	9	FAIL	9	IGSW		
10	#Ten	32		10	VVT	10	FC	10	2*2		
11	$12	33	E02	11		11	EFI－	11	TE2		
12	IGF	34	E01	12	VTA 2	12		12	SPD*1		
13	STAs			13	OX	13	PRG	13	CCO		
14	NSW*2			14	VTO 2	14	ABV	14	BATT		
15	OCV-			15	NCO+*2	15		15	3*2		
16	OCV+			16	IGT 3	16		16	RSPD*2		
17	S2 2			17	IGT 2			17			
18	ETC＋			18	OIL*2			18	EFIF		
19	VFs			19	HT			19	AC2		
20	ISC 4			20	THW			20	AC1		
21	ISC 3			21	THA			21	ELS2		
22	ISC 2			22	E2			22	+B		

＊1…M／T車のみ　＊2…A／T車のみ

JB3101

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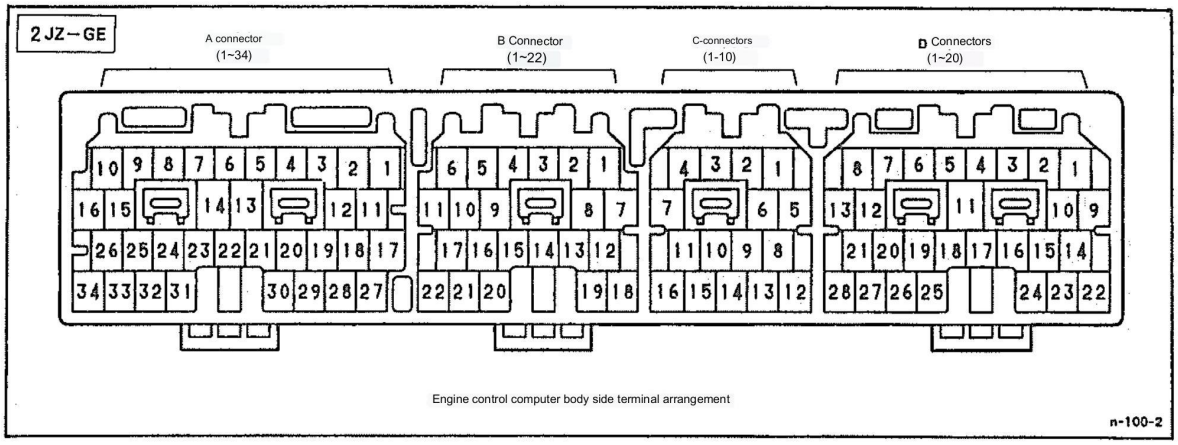
2



JB3692

Terminal Na	Terminal name	Terminal Na.	Terminal name	Terminal No.	Terminal name	Terminal Na	Terminal name	Terminal No.	Terminal name	Terminal No.	Terminal name
A-1		A-23	ISC1	B-1	VCs	C-1	NEO	D-1	TT	D-23	B2
2		24	IGT	2		2	MREL	2	L	24	R
3	SLN-	25	E1	3	NCO-	3	W	3	PWR	25	STP
4	SLU-	26		4	SP2-	4	FPR	4		26	
5	#60	27		5	NE+	5	TE1	5	ACMG	27	THWO
6	#50	28	SLU+	6	NE-	6	TRA	6	OD2	28	ELS
7	#40	29	KNK2	7	VTA	7	EFI+	7	OD1		
8	#30	30	KNK1	8	PIM	8	AC2	8	EGW		
9	#20	31	IDL2	9	SP2+	9	JVSC	9	IGSW		
10	#Ten	32		10	G2	10	FC	10	2		
11	$1	33	E02	11	IDLO	11	EFI-	11	TE2		
12	IGF	34	E01	12	VTA2	12	SNWO	12			
13	STAs			13	OX	13	PRG	13	CCO		
14	NSW			14		14	ACIS	14	BATT		
15	OCV-			15	NCO+	15	PSW	15			
16	OCV+			16	IGT3	16	SNW1	16			
17	S2			17	IGT2			17			
18	SLN+			18	OIL			18			
19	VFs			19	HT			19			
20	ISC4			20	THW			20	AC		
21	ISC3			21	THA			21	ELS2		
22	ISC2			22	E2			22	B		

JB3099

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Inspection system	end Child	Input/output measurement	Fixed 条 case	Reference [V]
Power system	BATT ↔ E1	input	Always	9-14
	B. +B ~ E1	input	Soil wash stop, IG F ON	9~14
	IGSW → E1			
	B2 ↔ E1			
	VC↔E1	output	IG乂ㄟ` ON	4.5 5.5
Ignition signal system	IGT IGT 1 IGT 2 IGT 3 → E1	output	After Kuma machine, at the time of permanent rotation	waveform 1
	IGF ↔ E1	input	After warm-up, at 7 car revolutions	waveform 1
Rotation signal system	NE+ G2 → NE- VVT	input	After warm-up, at 7 car revolutions	waveform 2
Spray signal system	#10, #20, #30 #40, #50, #60 →E1	output	After warm-up, ㄜ during downward rotation	waveform 3
Yagyu 一 一 せ Soviet system	PIM + · E1	input	67kPa (500 mmHg) negative pressure	1.3 1.9
			Open to atmosphere	3.3 3.9
1770 丫 one evening series	VG+ EVG	input	7A/COFF when rotating (A/T 7th rank certificate PNLY)	1.0 1.5
Oz古廿一系	OX ↔ E1	input	丁一ㄣ times 2500r/min for 2 minutes	waveform 4
Knock sensor system	KNK1- KNK2 E1	input	After warm-up, machine tool rotation 4000r/min, flight hold	waveform 5
water temperature	THW ↔ E1	input	Cooling water temperature 60-120°C (when warming up)	0.2 1.0
Intake temperature control system	THA →→ E1	input	Intake air temperature 0-80°C (when warming up)	0.5~3.4
Exhaust temperature せ 1 system	CCO ↔ E1	input	Exhaust temperature 950°C or less	1.0~5.5
Exhaust temperature warning system	EGW → E1	output	ダイアグ Yuichi Higuchi (1JZ-GE IS ECU Yuichi Kuchiyu) @CC E Terminal short 絡 (Exhaust temperature ㄣ 一 ㄥ` > when lit)	0 to 3
			71 minute rotation (when 1st, 2nd and 5th lights are off)	9 to 14
Check engine warning system	W → E1	output	Disconnect the water temperature sensor connector (when Chiku 7-55 lights up)	0 to 3
			When the 7th card is rotating (when the 5th light is turned off)	9-14
== Switch system	NSW → E1	input	シ Shore position P,NLE	0 ～ 3
			シ⊃Position PN other than washing	9 ～ 14
ス evening one evening one system	STA + E1	input	ク Ranking time	6 or more
feedback system	VF ← E1	output	After starting the engine, the rotation speed is 2500r/min.	1.8 3.2
ISC series / step one モ evening	ISC 1 ISC 2 ISC 3 ISC 4 ↔ E1	output	A/C OFF ON	waveform 6
ISC series / Solenoid	RSO- ▸ E1		After warming up, A/C OFF when rotating again	waveform 7
			After warming up, A/C ON when the car is rotating	

J83102

Steamed noodles

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Inspection system	end Child	input/output	condition	Reference value [V]
brake system	STP ↔ E1	input	Stop lamp switch ON	7.5 14
			Stop lamp switch OFF	0 to 1.5
IDL signal output system	IDLO E1	output	Throttle valve fully closed	0 to 3
			Throttle valve fully open	9 to 14
Throttle position sensor system	IDL 2 ↔ E1	input	Sub-throttle valve fully closed	0 ~ 3
			Sub-throttle valve fully open	9 to 14
	VTA VTA 1 Beta E1		Throttle valve fully closed	0.3 0.8
			Throttle valve fully open	3.2 ~ 4.9
	VTA2 → E1		Sub-throttle valve fully closed	0.3 0.8
			Sub-throttle valve fully open	3.2 4.9
	VTO1+ VTO2 + E1	output	Throttle valve fully closed	0.3 0.8
			Throttle valve fully open	3.24.9
electrical load system	ELS ELS 1 ↔ E1	input	headlights on	7.5 14
			headlight off	0 ~
	ELS2 ↔ E1		Defogger ON	7.5 14
			Defogger OFF	0 to 1.5
	ELS3 → E1		Electric fan ON	7.5 14
			Electric fan OFF	0 to 1.5
O2 sensor heater system	HT → E1	output	at idle rotation	0 to 3
			Engine stop, IG switch ON	9 to 14
A/C switch system	AC~E1 AC1	入力	A/C ON (magnet clutch ON)	0 to 1.5
			A/C OFF	7.5 14
A/C cut system	ACMG ↔ E1	output	A/C ON	0 to 3
			From the above state, the throttle valve is fully closed → fully open.	9 ~ 14
A/C torque number system	AC2E1	input	Engine stop, IG switch ON	waveform 8
VSV series for canister purge	PRG → E1	output	Engine stop, IG switch ON	9-14
			After warming up, when the accelerator is lightly depressed	waveform 9
Circuit opening relay system	FC → E1	output	Engine stop, IG switch ON	9 ~ 14
			After ringer, at idle rotation	0 ~ 3
main relay system	MREL E1	output	Engine stopped. IG switch ON	9 to 14
			IG switch OFF	0 to 1.5
VSV system for variable intake control	ACIS → E1	output	Idle speed → throttle opening 30° or more and engine speed 2500r/min or more, 4000r/min or less (VSV ON for variable intake control)	0 to 3
			Engine stop, IG switch ON (VSV OFF for variable intake control)	9 ~ 14
Fuel pump relay system	FPR ↔ E1	output	When idling for 2 seconds or more after starting (fuel pump relay ON)	0 to 3
			During cranking and after starting, when idling within 2 seconds (fuel pump relay OFF)	9 to 14
VSV system for fuel up control	FPU E1	output	Engine stop, IG switch ON (Fuel pressure up VSV OFF)	9 to 14

JE3103

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Inspection system	end Child	input/output	測 fixed conditions	Reference value [V]
VSV series for air bypass valve	ABV ↔ E1	output	Accelerator OFF from engine speed 5000r/min (air bypass valve VSV ON)	9-14 ↓ approx. 0~3 ↓ 9~14 for 1 second
			Engine stop, IG switch ON (Air bypass valve VSV OFF)	9 to 14
P/S pressure switch system	PSW ↔ E1	input	Steering off during idling, during sudden operation during steering, or until locked.	0 to 3
			Engine stop, IG switch ON	9 to 14
VVT signal system	OCV+ OCV-	output	Engine stop, IG switch ON	waveform 10
TRC ECU system	NEO E1+	output	暖 After machine, at idle rotation	waveform 11
	EFI+ EFI- ↔ E1		Engine stop, IG switch ON	waveform 12
	TRA E1	input	Engine stop, IG switch ON	waveform 13
A/C water temperature signal system	THWO + ↔ E1	output	Engine stop, IG switch ON	waveform 14
車速信号系	SPD SP2 ↔ E1	output	when running	waveform 15
engine control Computer error signal system Diagnosis	EFIF → E1	output	IG switch ON, engine control computer normal	0 to 2
			IG switch ON, engine control computer always	4.5 - 5.5
communication system	SIL → E1	output	Engine off, IG switch ON	9~14
Test terminal system	TT E1	output	Engine off, IG switch ON	0.5 or less
			Gradually depress the accelerator pedal from the fully closed position.	Gradually change from 0 to 8
	TE1 TE2 → E1		Engine stop, IG switch ON	9 ~ 14
			Short circuit between TEE, terminals, TE2 E terminals of diagnostic connector	0 to 3
	TC ↔ E1		Engine stop, IG switch ON	9 ~ 14
			Short circuit across the TC E1 terminals of the diagnostic connector	0 to 3
Earth system	E1 E2 E01 E02 ↔ body earth	earth	(Continuity check)	(always on)

JB3104

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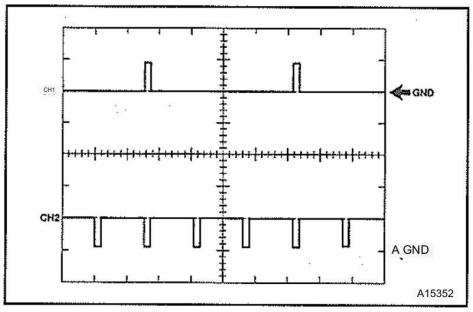
2



<Reference> Oscilloscope waveform

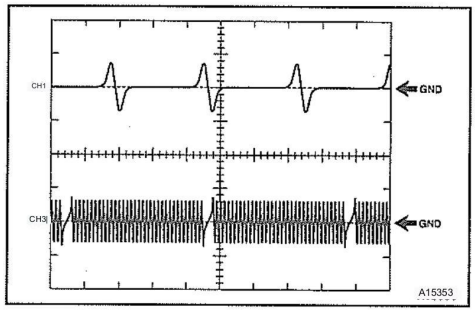
waveform 1

measurement terminal CHI: IGT, IGT 1, IGT 2, IGT3E1 As
CH2: IGFE1

Instrument set 5V/DIV, 20ms/DIV

Measurement conditions After warming up, at idling

注意 the engine speed increases, the waveform period becomes shorter.



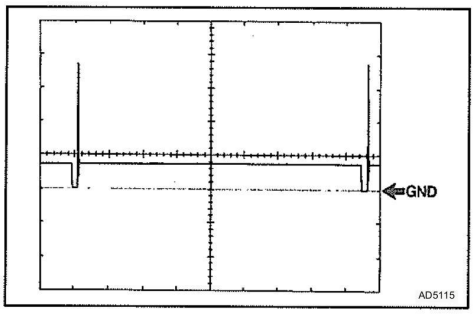
waveform 2

measurement terminal CH1: G2, VVTNE- CH2: NE+→NE-

Instrument set 2V/DIV, 20ms/DIV Caution

Measurement condition, After warm-up, at idle rotation

①The amplitude of each waveform increases as the engine speed increases. (2) Each waveform period becomes shorter.



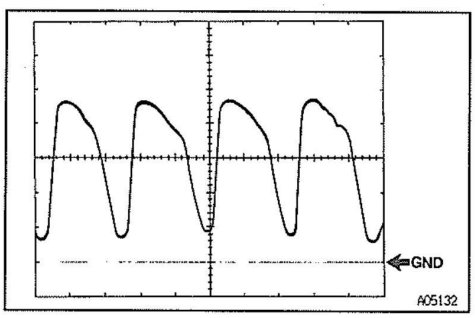
waveform 3

Measurement terminal #10, #20, #30
#40, #50, #60-E1

Instrument set 20V/DIV, 20ms/DIV

Measurement conditions After warm-up, at

idling Note: As the engine speed increases, the waveform period becomes shorter.



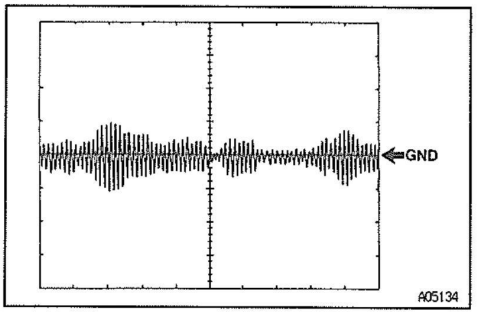
waveform 4

Measuring terminal OX-E 1

Instrument set 0.2V/DIV, 0.5s/DIV

Measurement condition, After warming up, keep the engine speed at 2500r/min for 2 minutes

The rear side O2 does not have the waveform shown in the figure.



waveform 5

Measurement terminals KNK 1, KNK 2-E1

Instrument set 0.5V/DIV, 1ms/DIV

Measurement conditions After warming up, keep the engine speed at 4000 r/min As the engine speed increases, the waveform amplitude increases.

注意 • The wave height differs slightly from vehicle to vehicle.

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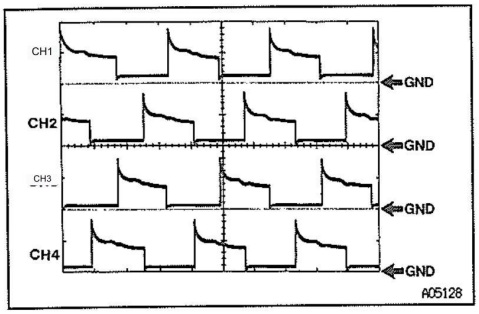


waveform 6

Measurement terminals CH1: ISC 1E1 CH2: ISC2 E1

CH3: ISC 3-E1 CH4: ISC 4E1 A/C

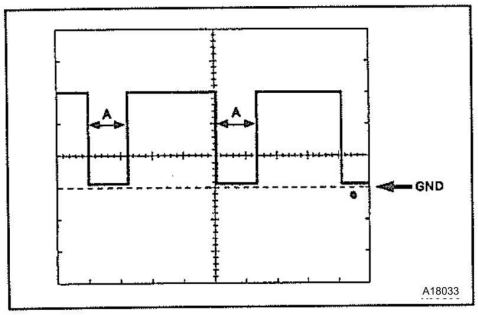
Instrument set 20V/DIV, 10ms/DIV

Measurement conditions After warming up, at idling

switch OFF→ON 4→ISC

注意 ISC when A/C switch OFF ON (idling speed up)

3→ISC2→ISC1 is energized in order, and the waveform shown in the figure is output.



waveform 7

Measuring terminal RSO E 1

Instrument set 5V/DIV, 2ms/DIV

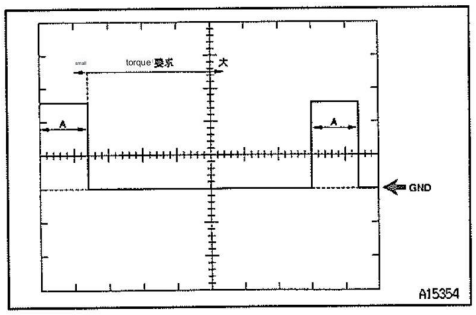
Measurement conditions After waist gear, at idle rotation

A/C switch OFF

<Reference> · A waveform with a period of approximately 8 ms is output.

· A changes when the A/C switch is turned from OFF to ON.

A/C switch OFF	AC switch ON
2.8ms	3.5ms



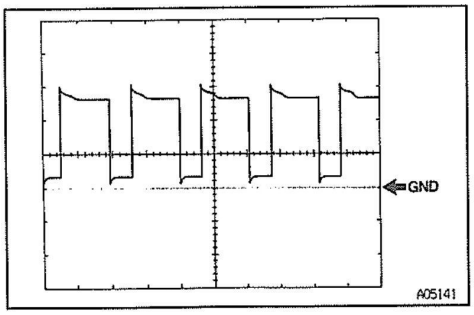
waveform 8

Measurement terminal AC2-E1

Instrument set 5V/DIV, 50ms/DIV

Measurement ,conditions Engine off, IG switch ON

<Reference> Part A changes according to the torque demand value of the A/C ECU.



waveform 9

Measurement terminal PRG-E 1

Instrument set 5V/DIV, 50ms/DIV

Measurement conditions After warm-up, lightly depressing

(the accelerator) Note: - Depending on the situation, the waveform shown in the figure

• may not occur. The duty ratio may differ depending on the situation.

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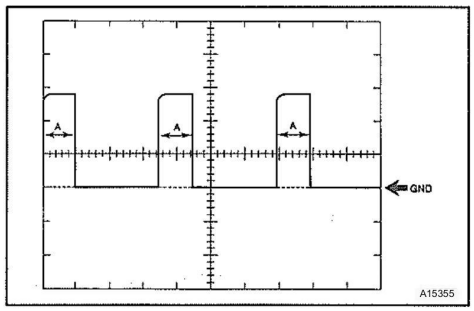
2



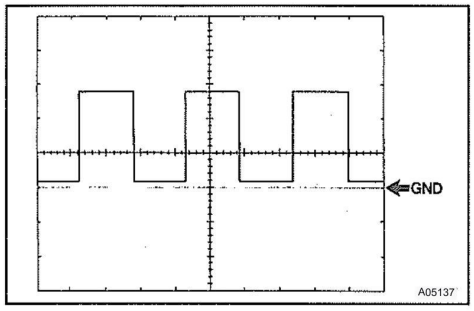
waveform 10

Measurement terminal OCV+↔OCV-

instrument set 5 V／DIV, 1 ms／DIV

Measurement conditions: So->So stop, IGメヽON

注意 Section A becomes shorter as the engine speed increases.



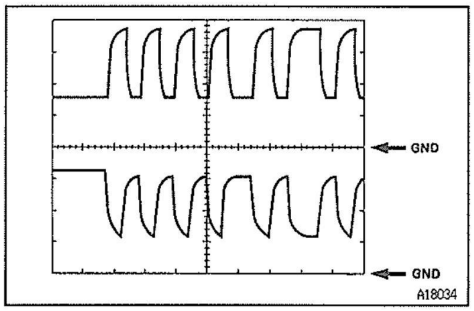
waveform 11

Measuring terminal NEO-E 1

Instrument set 5V/DIV, 2ms/DIV

Measurement conditions After warm-up, at the start

注意 of engine rotation As the engine speed increases, the waveform period becomes shorter.

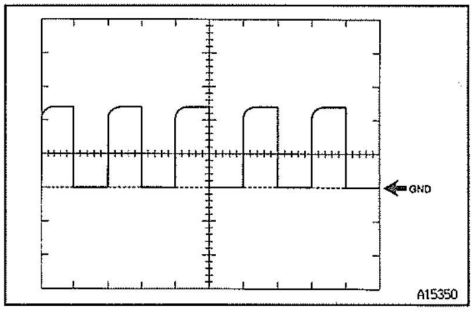


waveform 12

measurement terminal CH1: EFI+←E1 CH2: EFI－↔E 1

Instrument set 1V/DIV, 0.2ms/DIV

Measurement condition Engineering stop, IG ヌ亻y ON

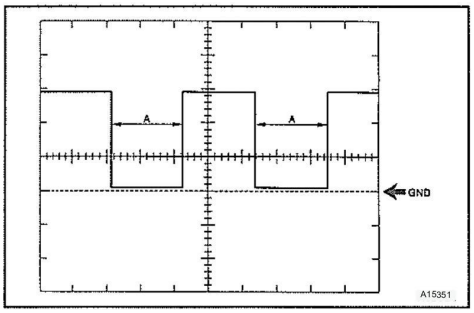


waveform 13

measurement terminal TRA↔E1

Instrument set 5V/DIV, 2ms/DIV

Measurement conditions 冫I>>>Stop,IG ヌ亻y to ON



waveform 14

Measurement terminal THWO→E 1

Instrument set 5V/DIV, 0.1ms/DIV

Measurement condition Machine stop, IG メ亻 ON

〈参考〉 ON A varies depending on cooling water temperature.

water temperature	35°C or less	75℃	90°C or higher
A.	8 ms	278.5ms	385ms

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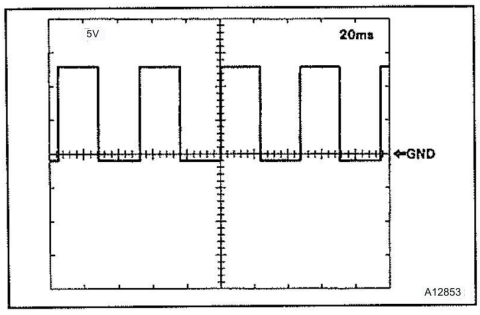

waveform 15

measurement terminal SPD, SP 2 ↔ E 1

Instrument set 5V/DIV, 20ms/DIV

Measurement conditions While driving

2

2 Computer data check

1JZ-GE

· Use the diagnostic tool S2000 and check according to the screen.

1JZ-GTE, 2JZ-GE

· Computer using Toyota Diagnosis Reader

read the data.

1JZ-GTE engine system code.....800

2JZ-GE engine system code.....818

3 Notes on reading computer data

· Computer data values may vary slightly due to measurement environment.

The value varies greatly due to differences in vehicle speed, aging of the vehicle, etc., and there is a clear

It is difficult to indicate a reference value (judgment value). Therefore, within reference values

Even if there is, there may be a problem.

· For subtle decreases such as breathing and rough idle, use the same type of vehicle.

Using a method of comparing data collection under the same conditions, computer

It is necessary to judge comprehensively from the previous item of data.

recollection times
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1JZ-GE

2

item name	Item name explanation	inspection conditions	Reference	Regular inspection items
F-S1	Indicates the execution state of air-fuel ratio F/B (feedback) control.	2500r/min at constant engine speed	Working 1=F/B normal working Working 2=O2 sensor error Not done 1=F/B conditions not met Not done 2=System normal Not done 3=System abnormal	OX voltage
CALO	It represents the magnitude of the engine load. Display range: 0 to 100% The higher the value, the higher the load at 3000r/min.	At idle speed	32~3796	Condition of air cleaner Accelerator cable state Throttle valve state
		2000r/min	22~2896	
			22-28%	
		Stall rotation	100%	
THW	Represents engine coolant temperature. Display range: -40~140℃	Cold start Full warm-up	Gradual decrease	THW Voltage
		Full warm-up	80~100℃	
SFT1	Represents the amount of F/B. Display range: -100% to 99.2% 100% — to 0% indicates that the injection amount is decreased, and 0% to 99.2% indicates that it is increased.	2500r/min at constant engine speed	-20~2096	OX voltage
LFT1	Learning to correct air-fuel ratio F/B control represents a value. Display range: -100%~99.2% 0% represents theoretical air-fuel ratio, -100~0% rich side, 0~99.2% lean side.	2500r/min at constant engine speed	-20~20%	OX voltage
MAP	Represents the internal pressure of the intake manifold. Display range: 0~225KpaG	When engine is stopped	100KpaG	VC, PIM voltage
		(1G ON) When idling (N range, A/C OFF)	32KpaG	
		2000r/min (N range, A/C OFF)	31KpaG	
		At 3000r/min (N range, A/C OFF)	30.5KpaG	
ESPD	Represents engine speed.	At engine stop (1G ON)	0 r/min	NE, G signal
		At constant engine speed	no major changes	
SPD1	represents vehicle speed.	When the vehicle is stopped When driving at a constant speed	0 km/h	SPD signal
			no major changes	
IGT	Represents the ignition timing of the No. 1 and No. 6 cylinders. Display range: BTDC63.5~ATDC64°CA	At cranking (N range, A/C OFF)	5 °CA	PIM voltage NE signal
		At idling (N range, A/C OFF)	11°CA	
		2000r/min (N range, A/C OFF)	28~32°CA	
		at 3000r/min (N range, A/C off)	40~44°CA	
THA	Represents intake air temperature. Display range: -40~140℃	———	Equivalent to ambient temperature	THA voltage

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item name	Item name explanation	inspection conditions	Reference	Check items for abnormalities
THPS	Represents the opening of the throttle valve. Display range: 0~100%	When the throttle valve is fully open	10~1496	VC, VTA voltage
		When the throttle valve is fully open	74-889%	
		Throttle valve fully open → Fully open	change continuously	
OS11	Represents the output voltage value of the O2 sensor. Display range: 0~1,275V	2500r/min At constant engine speed	0-1.27596	OX voltage
FT11	Represents the amount of F/B. Display range: -100% to 99.2% -100% to 0% indicates that the injection amount is decreased, and 0 to 99.2% indicates that it is 表increased.	2500r/min at constant engine speed	-20~20%	OX voltage
INJ	Represents the injection time of the No. 1 cylinder injector. Display range: 0~32.6ms	Cold start complete machine (N range, A/C OFF)	Gradual decrease	PIM, THW, OX Voltage
		At idling (N range, A/C OFF)	1.7ms	
		At 2000r/min (N range, A/C OFF)	1.5~2.0ms	
		At 3000r/min (N range, A/C off)	1.5~2.0ms	
ISCD	ISCV Display range: 0~99.6%	When the engine is stopped (IGON)	09%	VTA, THW Voltage Each switch signal
		cold start complete machine	Gradual decrease	
		At idling (N range, A/C OFF)	30%	
		A/C OFF→ON (N range)	0.8~1.0% increase	
		A/T N→D range (A/C OFF)	2WD 0.4% increase / 4WD 2.5% increase	
		Light defogger OFF → ON (N range, A/C off)	1.7% increase	
STAs	Indicates starting.	IG ON → Cranking	OFF→ON	Each switch signal
IDL	Represents the throttle valve fully closed.	Throttle valve fully closed → open	ON→OFF	
A/C	Indicates air conditioner operation.	Air conditioner OFF→ON	OFF→ON	
NSW	Represents the shift lever position N (P). Indicates	Shift lever N→D	ON→OFF	
ELS	that an electrical load is being generated.	Light Defogger OFF ON	OFF→ON	
STP 1	Represents stepping on the brake pedal.	brake pedal → depress	OFF→ON	
PSSW	Indicates that the power steering is in operation.	Steering straight → turning	OFF→ON	
FCI	Indicates that fuel cut is in operation during deceleration.	While driving at 3000~4000r/min → release the accelerator	OFF→ON	VTA voltage
FCTM	極Represents fuel cut operation at light load	Driving on a long downhill road	OFF→ON	
ACIS	Inspiratory control VSV	at idle rotation → • Throttle opening 30% 以上 • Engine speed 2500r/min 以上	OFF→ON	Each switch signal
FPC	FC/FPC control	E/G stop → Cranking	OFF→ON	
PRG	Purge VSV	Driving at a constant speed of 40km/h	OFF→ON	
AMG	Air conditioner magnet clutch relay	A/C OFF→ON	OFF→ON	
VVT2	VVT control 2	D range stall	OFF→ON	

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1JZ-GTE

2

item	powder conditions	Reference	Check items for abnormalities
TAU	Cold start ~ warm-up operation	value Gradual decrease	GA, THW, OX Voltage Air intake system leak, fuel pressure
	at idle rotation ※	1.5~2.5ms	
	2000r/min ※	1.5~2.5ms	
	3000r/min ※	1.5~2.5ms	
IGt	At idle speed (TE 1 ON) ※	8~12°CCA	TE1 voltage
	At idle rotation (TE1 OFF) ※	7~23°CCA	GA, THW, IDL Voltage
	2000 r/min 時 ※	35~45°CCA	
	3000 r/min 時 ※	40~60°CA	
ISC	Engine stop (when ignition switch is ON)	125 steps	Bad EF ECU
	Cold starting point ~ Warm-up	Gradual decrease	THW Voltage Intake system air leakage, that is, Each switch signal
	operation At idle rotation	15~40 steps	
	When A/C OFF→ON	15~25 steps increase	
	A/T N range D range	-5~10 steps increase	
	Light, defogger OFF→ON	0~15 step increments	
NE	Engine stop (when ignition switch is ON)	0 r/min	NE signal
	At constant engine	no big changes	
GA	speed Engine stop (When ignition switch is ON)	0g/s	VC, GA voltage
	At idle rotation*	3.0~5.5 g/s	
	2000r/min ※	5.0~15.5 g/s	
	3000r/min ※	7.0~20.0g/s	
VTA	When the throttle valve is fully closed	3° or less	VC, VTA voltage
	When the throttle valve is fully open	70° or more	
	Throttle valve fully closed → fully open	change continuously,	
THW	Start-up to machine operation	gradually rising	THW Voltage
		80~95℃	
SPD	While driving (compare with speedometer)	no big difference	SPD signal
STAs	During cranking	ON	STA 電圧
IDL	Throttle valve fully closed When open	ON→OFF	IDL voltage
A/C	When A/C OFF → ON	OFF→ON	A/C voltage
NSW	When A/T N range → D range	ON→OFF	NSW voltage
OX	2500r/min constant rotation	repeat rich/lean	OX voltage, TAU, ground potential Air intake system leak, fuel pressure

※……After complete machine, shift position N range, A/C OFF, electric load OFF, P/S OFF, battery voltage 13~14V

correction flag	1	2	3	4	5
	increase after starting 暖	increase in love machine	A/F feedback	Knock advance correction	———

switch condition	1	2	3	4	5	6	7	8
	STAs	IDL	A/C	NSW	OX	———	———	DIAG

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recollection

2JZ-GE

item	test condition	Reference	Check items for abnormalities
TAU	Cold start to warm-up	value Decrease gradually	PIM, THW, OX voltage Intake system air leakage
	operation At idle rotation	1.8~3.0msec	
	2000r/min	2.0~3.0msec	
	3000r/min	2.0~3.0msec	
IGt	At idle speed (TE1 ON)	9-11°CA	TE1 voltage
	At idling (TE1 OFF) at	5~21°CA	PIM, THW.IDL Voltage
	2000r/min	25~40°CA	
	3000r/min	30~45°CA	
ISC	When the engine is stopped (when IG is ON)	125 steps	Bad EFI ECU
	Cold start ~ machine operation	Gradual decrease	THW Voltage Intake system air leakage, that is, each switch signal
	at idle rotation	16~35 steps	
	When A/C OFF → ON	4~30 steps increase	
	When A/T N range → D range	0~8 step increase	
	When lights and defogger are OFF→ON When	2~9 steps increase	
NE	the engine is stopped (when IG is ON)	650r/min	NE, G - signal
	When the engine is rotating at a constant	no major changes	
PIM	speed When the engine is stopped	100~101kPa {750~760mmHg}	VC, PIM voltage
	at idle rotation	28~36kPa (210~270mmHg)	
	2000r/min	24~31kPa {180~230mmHg}	
	3000r/min	25~32kPa {190~240mmHg}	
THW	Complete inhalation	80~95℃	THW Voltage
VTA	When the throttle valve is fully closed	3° or less	VC, VTA voltage
	When the throttle valve is fully open	70° or more	
	Throttle valve fully open → Fully open	change continuously	
SPD	Running (compared with speedometer)	no big difference	SPD signal
STAs	When cranking	ON	STA voltage
IDL	Throttle valve fully closed When open	—	VTA voltage, EFI ECU bad
A/C	When A/C OFF→ON	OFF→ON	AC voltage
NSW	A/T N range → D range	ON→OFF	NSW voltage
OX	2500r/min at constant rotation	repeat rich/lean	OX voltage, TAU, ground potential Intake system air leakage, fuel pressure

correction flag	1	2	3	4	5
	increase after starting	Increase after warm-up	A/F feedback (F)*	Knock advance correction	A/F feedback (R)*

switch condition	1	2	3	4	5	6	7	8
	STAs	IDL	A/C	NSW	OX	———	———	DIAG

*..... (F) indicates the front side (R) indicates the rear side.

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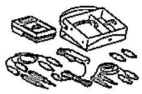
T0045768

Electronic Throttle Control System (ETCS) [1JZ-GTE]

2

supplies

計 器

	09082-00012	Toyota Electrical Tester	For each part point
	(09083-00060)	Mini Test Lead	for computer inspection
	09843-18020	Diagnosis check wire	For diagnostic connector or TDCL short circuit
	09991-50100	Toyota Diagnosis Reader Set	For diagnostic code reading
	09991-50320	Program IC card engine system 3	For diagnostic code reading
oscilloscope			For throttle control computer inspection

20501

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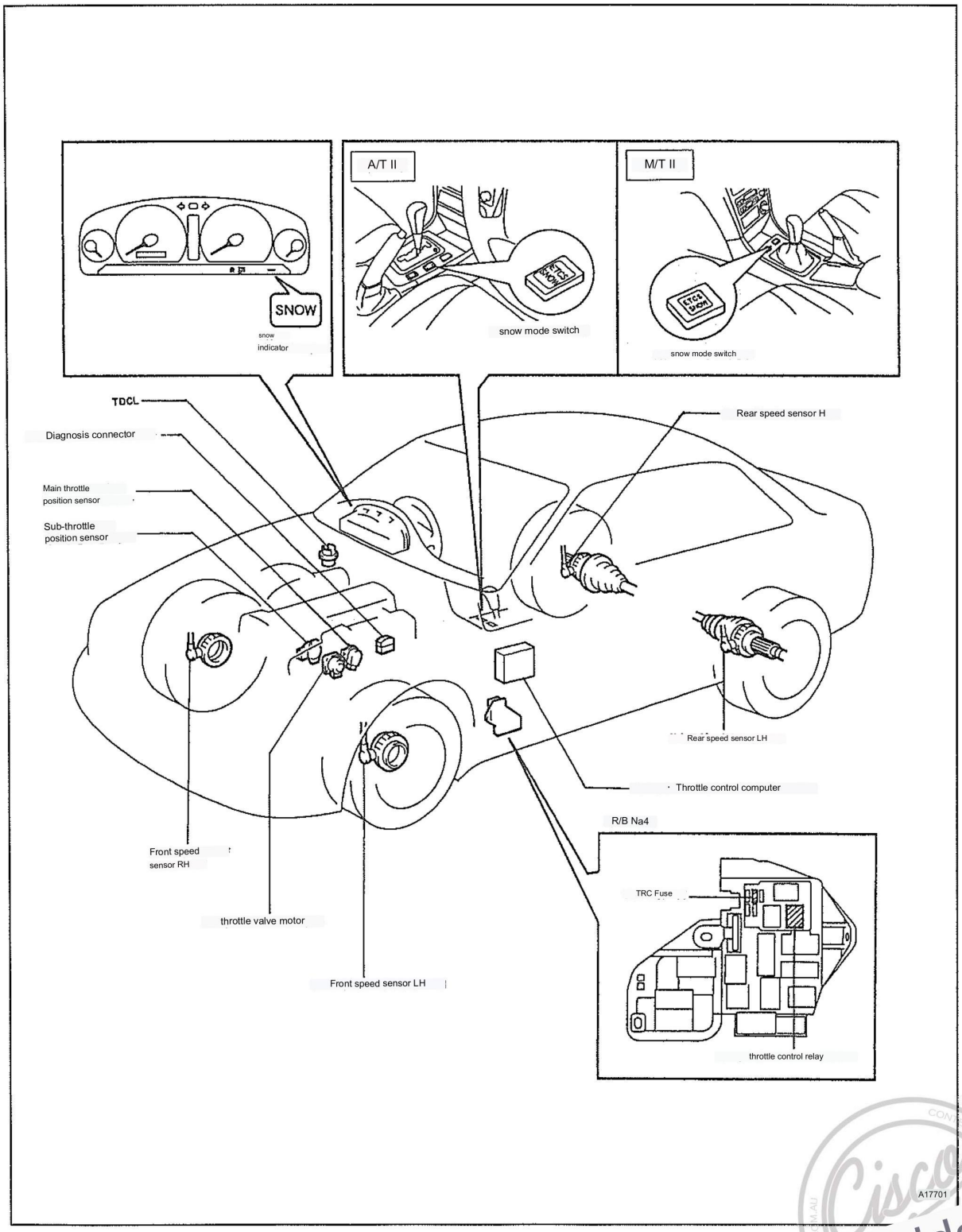
T0048709

parts layout



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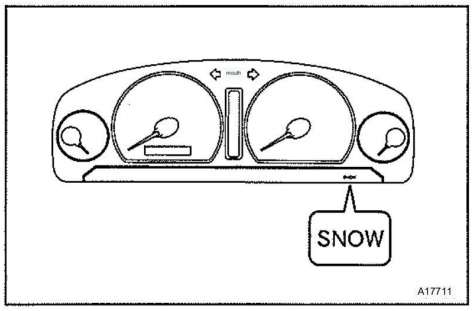

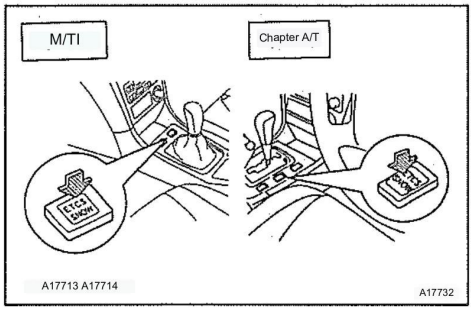

T0046771

Functional check

Snow indicator check

(1) Confirm that the lamp lights up with the IG switch ON. (2) Inspect the snow mode switch.

① Engine start ····· Light off

(2) Press the switch.... Lights up.

③Press the switch again.

Throttle valve motor inspection

(1) Shift the shift lever to P or N range (A/T car), turn the ignition switch to ON, then turn the ignition switch to OFF · Do Check that the throttle valve motor operating sound ("Zee") is heard when the engine is turned on. (initial check)

注意 · Do not start the engine. not depress the accelerator pedal.

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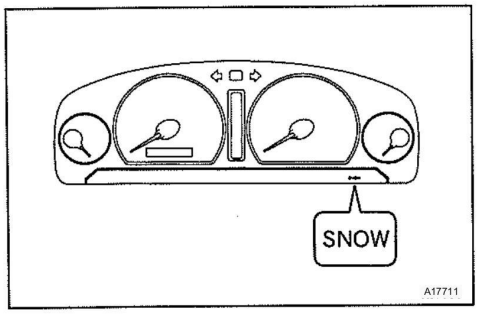
T0048772

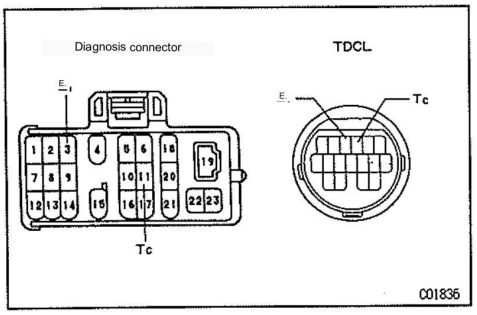


troubleshooting

Fail-safe function

- If an abnormality occurs in the throttle system or engine control system, the snow indicator flashes to indicate the abnormality.
- When the snow indicator flashes (when an abnormality occurs), the control signal to the sub-throttle valve motor is prohibited, the sub-throttle valve is fully opened by the return spring, and the electronic throttle control system is not installed. Become.

Diagnosis check



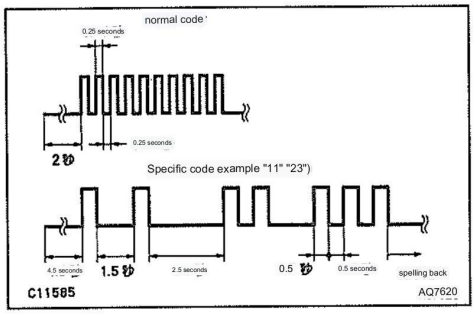
Reading by combination meter

1 To E, short circuit between terminals

- Short across the diagnosis connector or the TE terminal of TDCL.

2 IG switch ON

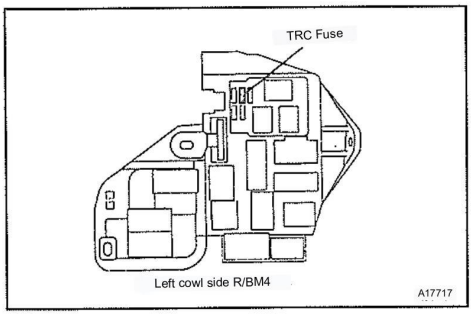
- Reads the number of times the SNOW lamp blinks.



Reading by Toyota Diagnosis Reader

- Using a diagnostic reader, read the code.

engine system code 800



Diagnosis code clear

- After removing the TRC fuse for 10 seconds or more, connect the fuse. be.

NOTE After checking and repairing the ETCS device, be sure to erase the memory of the diagnostic sheath code once and confirm that the normal code is output.

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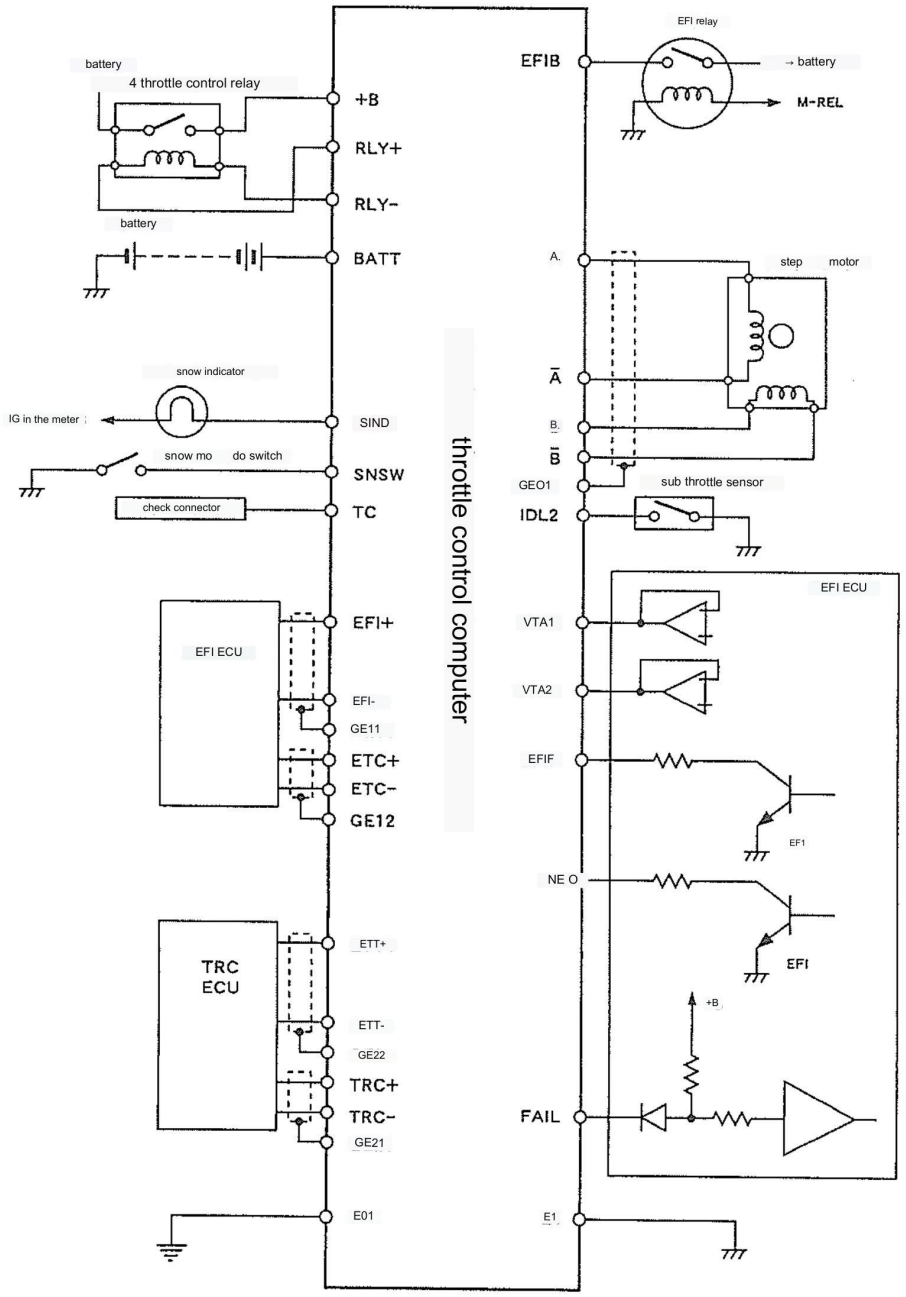
2

External wiring diagram (outline)



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Diagnosis code list

code 番号	Diagnosis item [Terminal symbol]	diagnosis break 内 Content (1) Diagnosis conditions ② Abnormal state ③ Abnormal period	Inspection details
11	Throttle control relay system open [+B, RLY+, RLY-]	② Throttle control relay ON output (+B terminal voltage does not output 4V or more even though IG is turned ON ③ 1 second or more	Throttle control relay (Refer to P2-79) · Wire harness and connector (throttle control relay system) · TRC fuse
12	Throttle control relay system short [+B, RLY+]	② 4V or more is output to the +B terminal voltage even though the throttle control relay is OFF ③2 seconds or more	• Throttle control relay (Refer to P2-79) · Wire harness and connector (throttle control relay system)
21	Throttle valve motor system [A, A, B, B, E013	② Short circuit or disconnection of the throttle valve motor circuit.	· Throttle valve motor (Refer to P2-52) · Wire harness and connector (Throttle valve motor E01 , system)
22	Throttle valve motor system malfunction [A, A, B, B, VTA2] [DL2, E1 VTA2]	(2) When the opening of the sub-throttle valve deviates.	• throttle valve motor (Refer to • P2.52) Sub-throttle valve · Sub-throttle position sensor (Refer to P2-52) · Wire harness and connector (throttle valve motor E1 , system)
23	Throttle body system malfunction A, A, B, B, LIDL 2, E1 VTA2) VTA2)	(2) When the sub-throttle valve is fully open and the fully closed angle is small.	· Sub-throttle valve · Sub-throttle position sensor (Refer to P2-52)
24	Sub-throttle position sensor leak/valve stick (A, A, B, B, VTA2 LIDL 2, E1 VTA2)	② Even if the throttle valve motor is fully opened, the sub-throttle Position sensor VTA2 output does not correspond to full open	· Sub throttle valve · Sub-throttle position sensor (see 2-52) · Wire harness and connector (E1 system)
31	Main throttle position sensor signal fault (VTA 1, E1)	② Disconnection of the main throttle sensor circuit, short circuit with ground and +B ③ 0.5 seconds or more	• Main Throttle Position Sensor (Refer to P2-49) · Wire harness and connector (main throttle position sensor, E1 system)
32	Sub-throttle position sensor signal error (A, A, B, [BL B1B, VTA2] | 10.5 seconds or more	② Broken wire in the sub-throttle position sensor circuit, ground and and +B short circuit IDL 2 does not turn ON even if the throttle valve motor is fully open	• Sub-throttle position sensor (P2-52) • Wire harness and connector (sub-throttle position sensor, throttle valve motor, E1 system) • Throttle valve motor (see P2-52) · Sub-throttle valve

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2

code	Diagnostic item [Terminal symbol	内 (1) Diagnosis conditions	② Abnormal state	③ Abnormal	Contents of
41	Engine rpm signal disconnection, short [NE]	period (2) Detected engine speed 0r/min while engine is running ① 0.2 seconds or more			· Wire harness and connector (NE system) Engine control computer (see P2-57)
42	Engine control computer malfunction (EFIF)	② Engine control computer error signal ON (EFIF terminal voltage Hi) detected ③ 1 second or longer			•Wire harness and connector (EFIF system) •Engine control computer (Refer to P2-57)
43	EFI serial communication system error [EFI+, EFI-]	② Communication data from the engine control computer is normal ⑩ 5 seconds or longer			· Wire harnesses and connectors (EFI+, EFI single system) · Engine control computer (see 2-57)
51	Power supply voltage drop (+B)	(2) When the opening of the sub-throttle valve deviates due to a drop in power supply voltage			· Wire harness and connector (+B, E01 system)
52	Power supply voltage drop [+B]	① Engine speed 500r/min or more, throttle relay ON ② +B < 8V ③ 10 seconds or longer			· Wire harness and connector (+B, E01 • series) Battery ·· Regulator
71	emergency Fuel cut (at the same time motor system malfunction judgment)	(2) Receives two consecutive vehicle stability control request signals from the engine control computer (2) Throttle control computer motor system malfunction detection (3) Within ±0.5 seconds after receiving the second vehicle stability control request signal from the engine control computer			· Throttle valve motor (see 2-52) · Sub-throttle valve
fuel	Emergency 72 cut (no motor malfunction judgment)	(2) Receives two consecutive vehicle stability control request signals from the engine control computer			· Throttle valve motor (Refer to P2-52) · Sub-throttle valve

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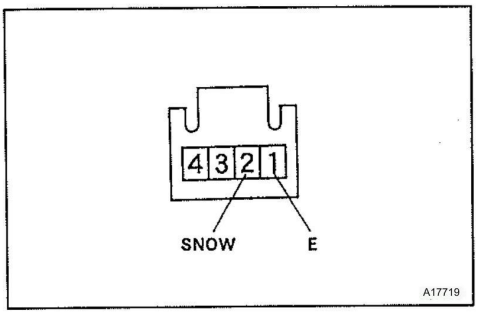


Unit inspection

snow mode switch

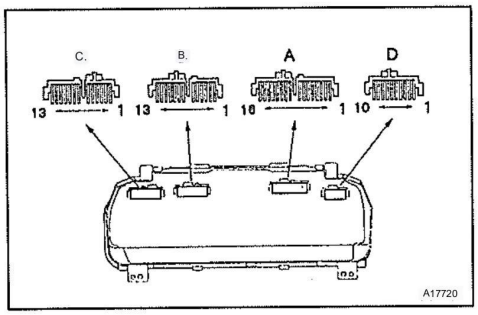
1 Continuity check

(1) Check for continuity between the SNOW E terminals when the switch is operated.

admit.

standard When the switch is not pressed, no continuity

When the switch is pressed: Conduction exists



snow indicator

1 Lamp lighting inspection

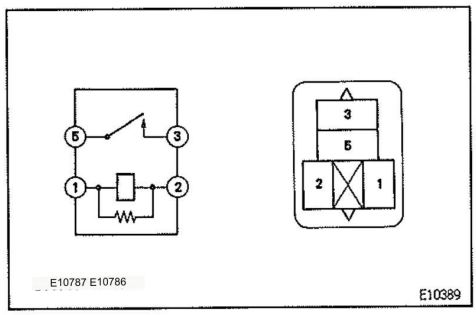
(1) Snow indicator when battery voltage is applied to each terminal

Make sure the lamp lights up.

standard

	battery +	battery ⊖
snow indicator lamp	B9	C10

JB3076



throttle control relay

1 Resistance and continuity check

(1) Using a Toyota Electrical Tester, measure the resistance between each terminal.

Measure.

Standard value 1 74~118Ω between two terminals

10 MΩ or more between 35 terminals

(2) When the battery voltage is applied between the 12 terminals, the voltage between the 35 terminals

Check for continuity. Standard

continuity

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2

throttle valve motor
(Refer to "Engine control system" - "Individual inspection")

Main throttle position sensor (see
"Engine Control System" "Individual Inspection")

Sub-throttle position sensor (see
"Engine Control System"--"Individual Inspection")

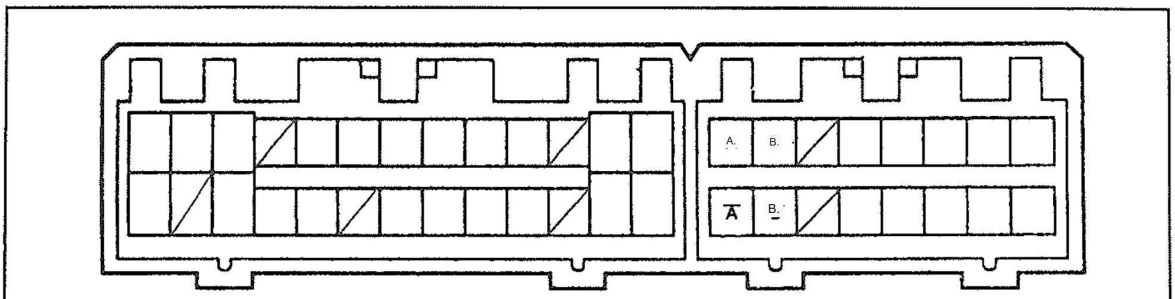
Front speed sensor
(see ``Brakes'' - ``Anti-lock system")

Rear speed sensor
((see "Brakes" - "Anti-lock system")

throttle control computer

1 Resistance and operation check

(1) Turn the ignition switch to OFF, disconnect the connector from the computer, and connect the resistance between each terminal with the vehicle W/H side connector. Measure resistance.



Vd-42-2

Inspection system	端 Child	fixed 条 subject	Reference value [Ω]
Throttle valve motor system	A → A	IG switch OFF	0.5 ~ 1
	B ↔ B	IG switch OFF	0.5~1

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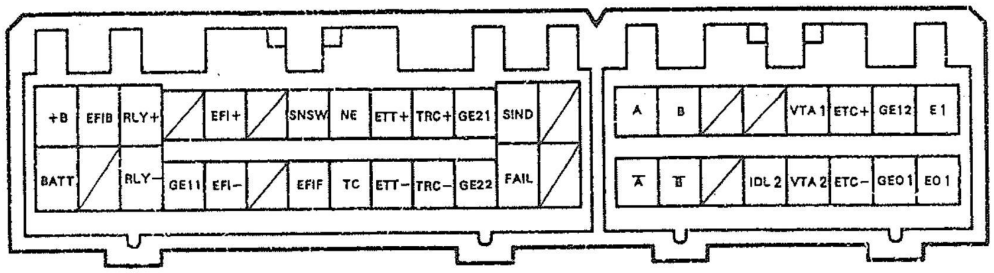
(2) Connect the mini-leads to the Toyota Electrical Tester and measure the voltage between each terminal. With the connector connected to the computer, Inspect from behind.

注意



Vd-42-2

Ignition system	end Child	In and out 力	— constant conditions	Reference value [V]
power system	BATT → E1	input	Engine	9 ~ 14
	+B+E1	input	stopped, IG switch ON	9 ~ 14
	EFIB → E1	input	Engine stop, IG switch ON Main	9 to 14
Main throttle position sensor system	VTA 1 → E1	input	throttle valve fully closed	0.3 ~ 0.8
			Main throttle valve fully open	3.2 4.9
Sub-throttle position sensor system	IDL 2 ↔ E1	input	At idle speed, sub-throttle valve fully closed	0 ~ 3
			Sub-throttle valve fully open	9 to 14
	VTA2 → E1	input	At idle speed, sub-throttle valve fully closed	0.3 0.8
			Sub-throttle valve fully open	3.2 4.9
Snow indicator system	SIND + E1	output	IG switch ON. When the snow indicator is lit	0 to 3
			IG switch ON, snow indicator off	9 ~ 14
Snow mode switch system	SNSW → E1	input	IG switch ON, snow mode switch pressed and held	0 ~ 3
			IG switch ON, snow mode switch not pressed	9 to 14
Throttle valve motor system	AE1	Output	at idle rotation	waveform 1
	A-E1	Output		
	B÷E1	output		
	B-E1	output		
Throttle control relay system	RLY+ ↔ RLY−	output	IG switch ON	9 to 14
Engine speed signal system	NE ↔ E1	input	at idle rotation	waveform 2
Throttle control computer error signal system	FAIL ↔ E1	出力	When the IG switch is ON and the electronic throttle system is normal	waveform 3
			When the IG switch is ON and the electronic throttle system is abnormal	9 to 14
Engine control computer error signal system	EFIF ↔ E1	input	IG switch ON, When the engine control computer is normal	0~2
			IG switch ON. Engine control computer malfunction	4.5 5.5

JB2874

Courtesy call recollection
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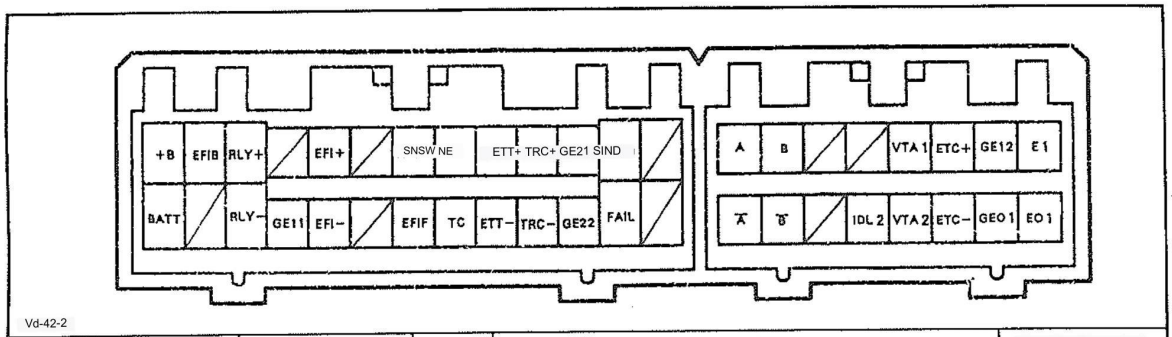
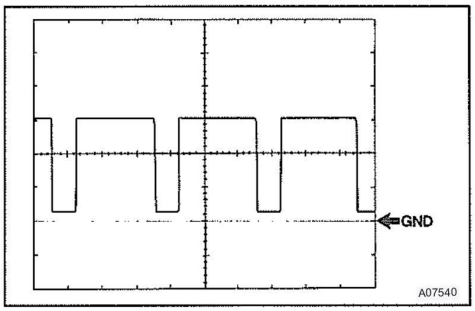


Vd-42-2

Inspection system	end Child	input/output	rule	Reference [V]
通信系	EFI+↔E1	input	IG Lee FON	waveform 4
	EFI E1	input	IG X1 ON	
	TRC＋↔E1	input	IGヌイ FON	
	TRC－↔E1	input	IG A ON	
	ETC＋↔E1	output	IGヌイ ON	waveform 5
	ETC－↔E1	output	IGヌi9 ON	
	ETT＋→E1	output	IGXi in ON	
	ETT-E1	output	IG X ON	
Check connector system	TC←E1	input	Sat 5 stop, IGXア ON	4.5 ~ 5.5
Ryoichi system	E1, E01 GE01, GE11 GE12 GE21 GE22 ↔ ボデー アース	アース	(through inspection)	(currently conducting)

JB2876



〈参考〉 oscilloscope waveform

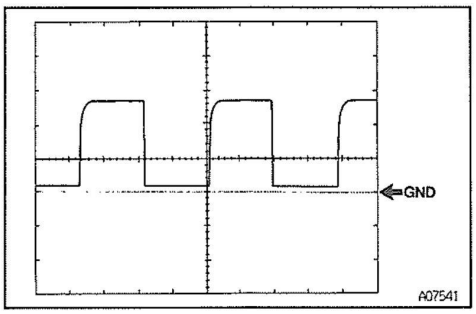
waveform 1

Measurement terminal A←E1 A-E1 B→E1 BE1

Instrument set 5V/DIV, 20ms/DIV

Measurement conditions At idle rotation

注意 Depending on the position of the sub-throttle valve, the waveform may not appear, so in that case, operate the accelerator.



waveform 2

measurement terminal · NE→E1

Instrument set 5V/DIV, 2ms/DIV

Measurement conditions At idle rotation

注意 工 A machine with increased rotational speed and a short waveform period.

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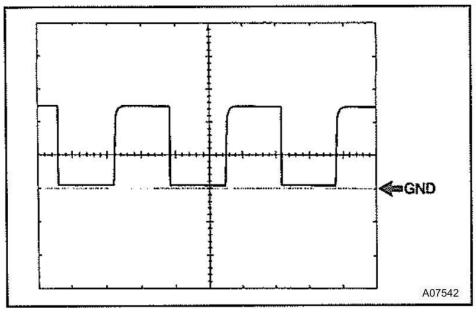


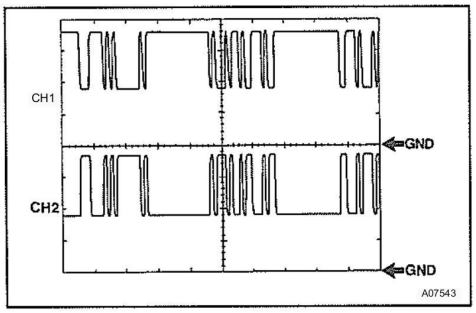
waveform 3

measurement terminal FAIL↔E1

instrument set 5V／DIV, 10ms／DIV

Measurement conditions IG ヌイy to ON T electronic メunder the mouthルメムム normal

2

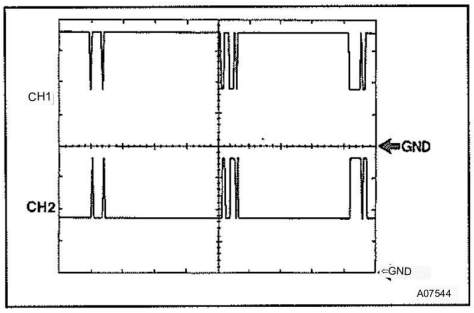


waveform 4

measurement terminal CH1: EFI+→E1 CH2: EFI←←E1 CH1: TRC+E 1 CH2: TRC-→E Instrument

set 1V/ DIV, 1ms/DIV

Measurement condition IG ヌイ吵ON



waveform 5

measurement terminal CH1: ETC+↔E1 CH2: ETC－↔E1

CH1: ETT+↔E1 CH2: ETC－↔E1

Instrument set 1V/DIV, 2ms/DIV

Measurement condition IG ヌイy f ON

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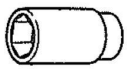
T0049773

engine assembly

supplies

2

S S T

	09213-70010	crankshaft pulley holding tool	For fixing the crankshaft pulley
	(90105-08076)	BOLT	For fixing the crankshaft pulley
	09330-00021	Companion Flange Holding Tool	For fixing the crankshaft pulley
	09816-30010	oil pressure switch socket	For removal of oil bullet switch and knock control sensor

tool

	09090-04020	engine sling device	For engine removal
	09258-00030	hose plug set	For hose airtightness
Deep socket wrench (14man)	10203		For removal of exhaust front pipe

Fats and oils Other

engine hanger	55810	For engine removal (12281-46050)
bolt	54643	For engine removal (90105-10346)
Toyota genuine auto fluid type T-III	30312	For automatic transmission supplement
Toyota genuine engine oil	32103	For cooling water injection
Adhesive 1324	50401	For applying drive plate, torque converter bolt oil pressure switch
Toyota genuine engine oil	32103	Replenishment
wire	52015	P/S vane pump and A/C compressor - for suspension

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T0049774

Engine assembly desorption

Tightening torque table

2

place of tightening	箇	Tightening torque [N·m {kgf·cm}]
drive plate ×	crankshaft	83.4 (850) *2
	torque converter	41.2 (420)
Flywheel (1JZ-GTE)	× Crankshaft	49 (500) (+90°)*1**
cylinder block ×	transmission housing	37 (380) (M10)
		72 (730) (M12)
transmission housing	× Starter	39 (400)
front exhaust pipe ×	EX manifold	62.0 (630) *1
	EX center pipe	43 (440)
engine rear mounting insulator ×	transmission	12 (120)
		60 (600)***
engine rear support member ×	Engine rear mounting insulator	13.5 (135)
		38 {375}3
engine rear support member	× Body	25 (250)
engine front mounting insulator	× Suspension cross member	51.5 (525)
stabilizer bar	× Body	17.6 (180)
A/C compressor	× Cylinder block	52.0 (530)
Stud bolt for A/C compressor ×	cylinder block	26.0 (265)
P/S Vane Pump W/ Bracket ×	A/C compressor	57.8 (590)
	cylinder block	39.2 (400)
P/S Vane pump rear stay X (Excluding 1JZ-GTE)	intake manifold stay	39.2 (400)
	P/S Vane Pump Bracket	39.2 (400)
P/S Vane Pump Stay (1JZ-GTE) ×	Cylinder Block	43.1 (440)
	P/S pane pump bracket	39.2 (440)
P/S gearbox ×	suspension cross member	68.6 (700) (Right side)
		58.8 (600) (left)
		53 {540} **
sliding joke ×	P/S gearbox	35.3 (360)
	intermediate shaft	35.3 (360)
radiator support ×	radiator support upper member	15.2 (155)
fuel support	X fuel main hose	29.5 (300)

*Non-reusable parts 2 Pre-coated bolts 3M/T car 44WD car

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2

Precautions for desorption work

1 Engine wire harness removal

- Disconnect the connector on the engine control computer side and remove the engine wire harness together with the engine assembly.

vinegar.

2 P/S vane pump removal and installation

· Remove the P/S vane pump with high and low pressure hoses, remove wires, etc. hang it with

3 Remove and install A/C compressor

(1) Remove 4 bolts, 1 nut and stud bolt.

(2) Remove the A/C compressor with the A/C hose and remove the wire, etc. hang it with

4 Disconnect steering gear assembly

(1) Remove two bolts and remove the sliding yoke. (2) Remove 4 bolts and separate the steering gear assembly.

Note • Do not disconnect the pressure feed hose and return hose.

(3) Suspend the steering gear assembly from the front suspension cross member with a wire or the like.

CAUTION Be careful not to apply a load to the P/S hose and tie rod end. be.

5 Removing and installing the rear propeller shaft

(See "propeller shaft" - "rya propeller shaft")

6 Removing and installing the front propeller shaft (4WD vehicle)

(See "Propeller Shaft" - "Front Propeller Shaft")

7 Removing and installing the front drive shaft (4WD vehicle)

(Refer to "Drive Shaft" - "Front Drive Shaft") · Engine

8 Engine ASSY removal and installation (except 1JZ-GTE)

hanger No. 1 is a spare part for engine ASSY removal and installation. required.

Engine Hanger No. 1 12281-46050

Bolt 90105-10345

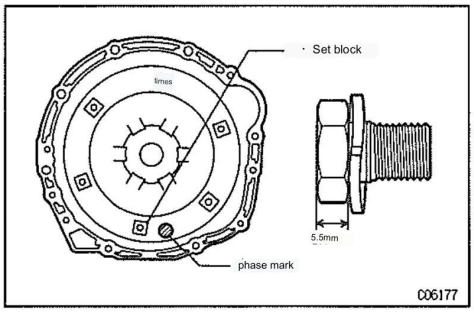
T=40N•m {408kgf•cm}

<Reference> Attach the engine hanger No.1 to the cylinder head.

· Remove the prepared engine hanger No.1 after desorption work.

9 Drive plate or flywheel installation "Engine"

(- "Rear oil seal" - Points to remember when removing and installing 3")



10 Remove and install the torque converter centering bolt

· Attach an identification mark to the bolt closest to the phase mark.

注意 Do not change the mounting position of the

bolt. <Reference> The bolt closest to the phase mark is 0.5mm longer than the other bolts.

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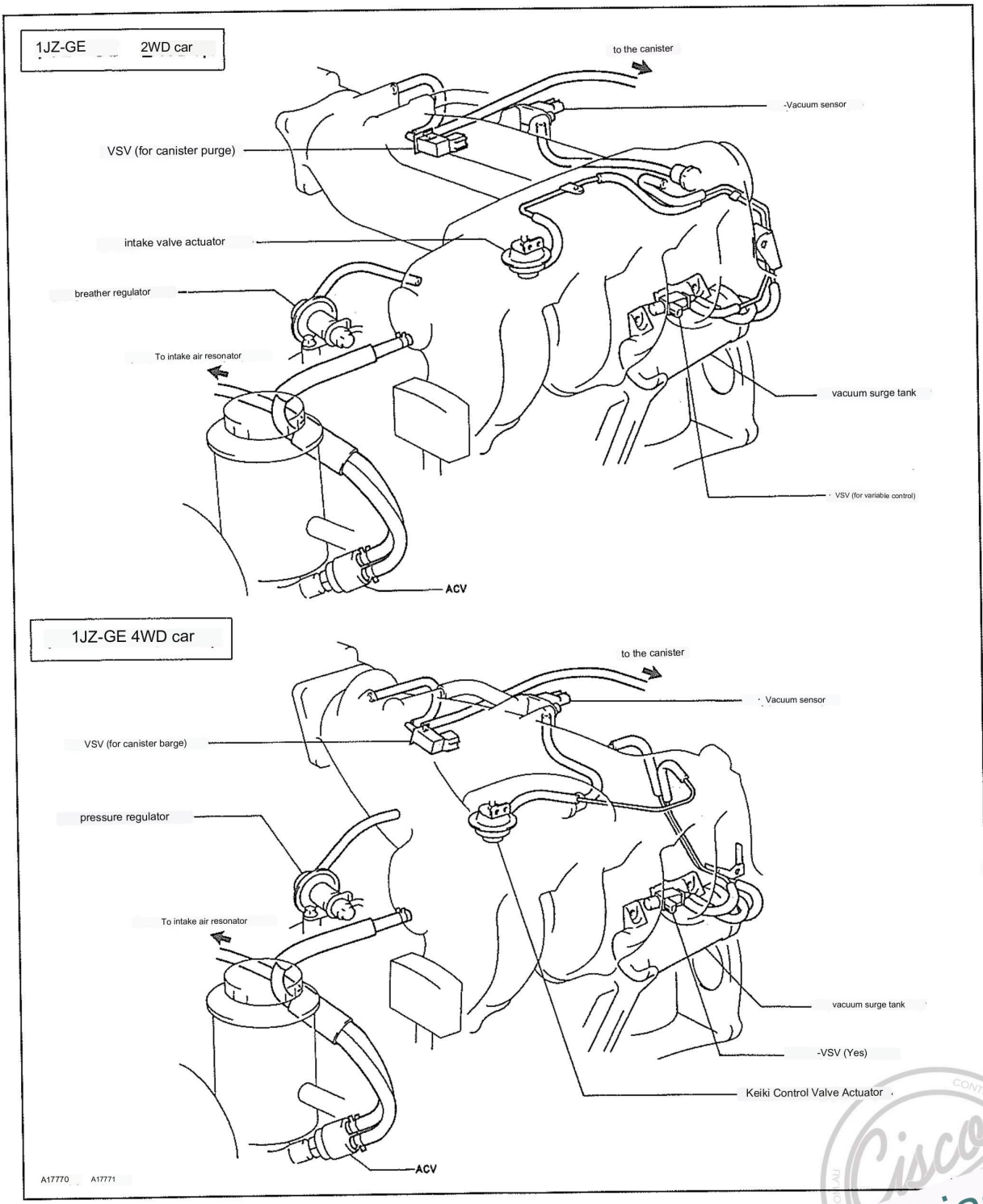
T0049778

vacuum piping

piping diagram

2



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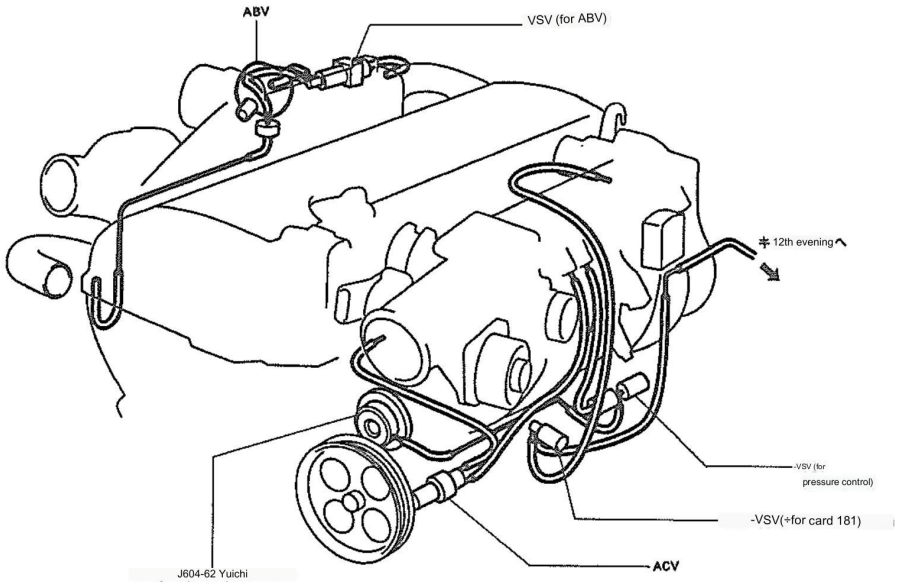
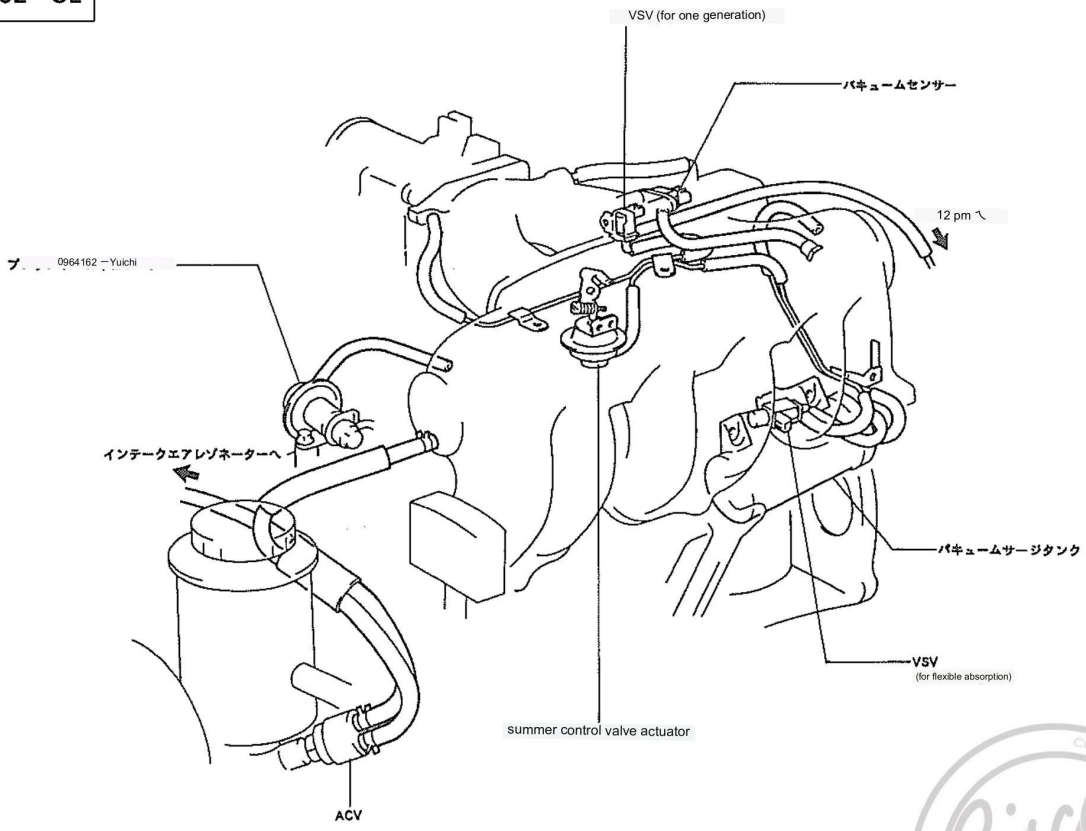
1 JZ-GTE



2 JZ－GE



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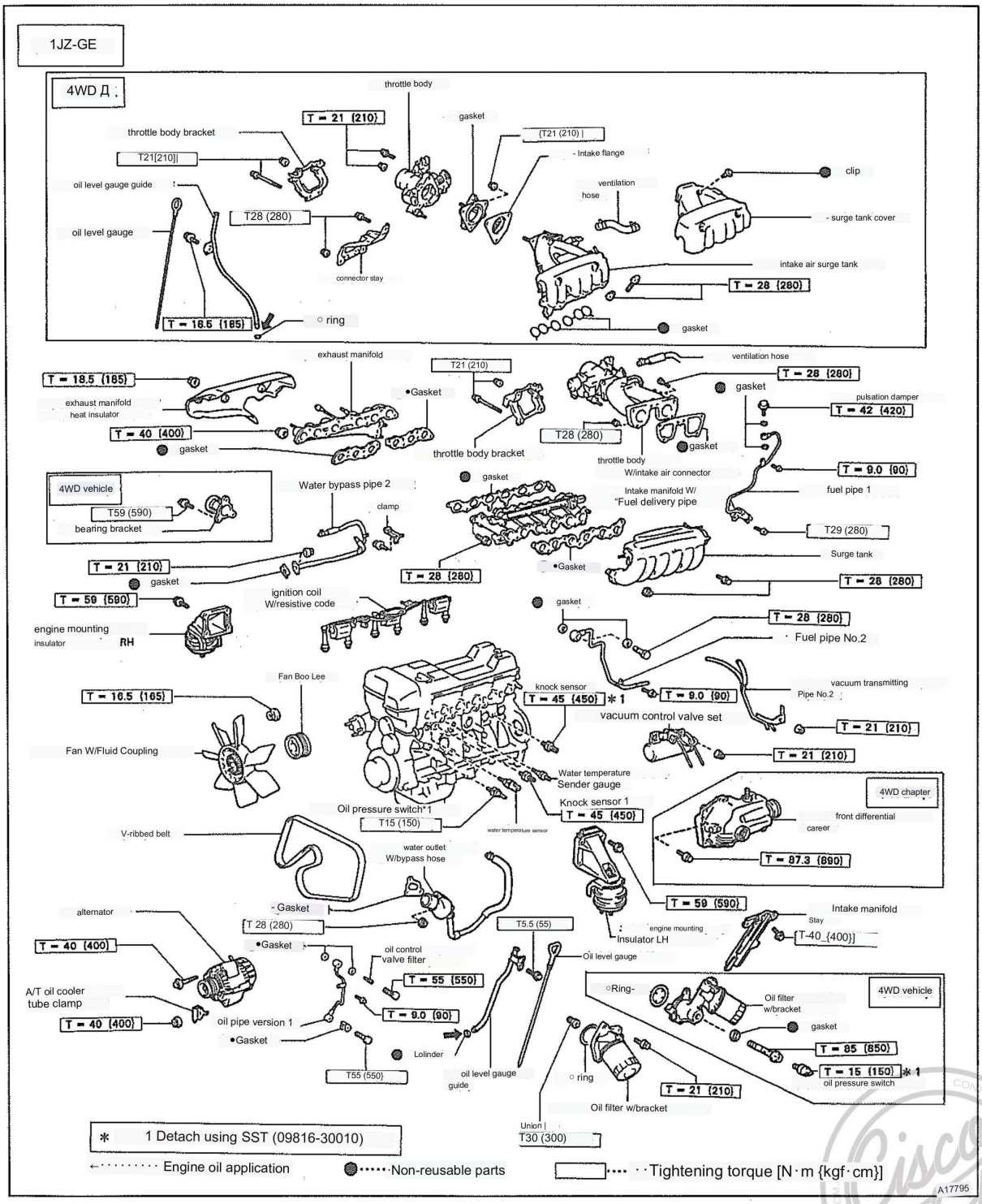
ASSY Partial engine

Exploded view



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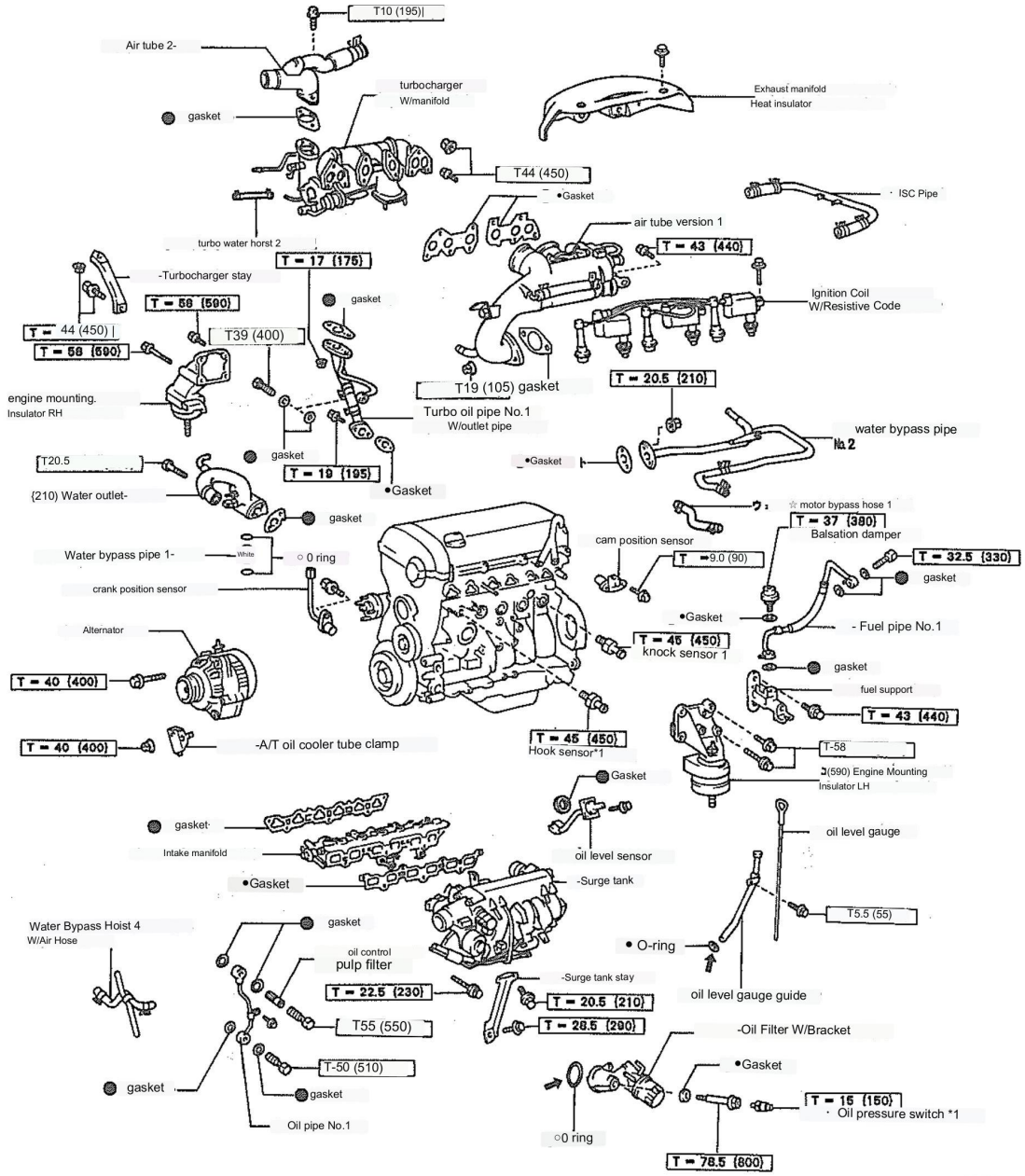
1 JZ-GTE



* 1 Detach using SST (09816-30010)

A17642 ← ····· Engine oil application ●····· Non-reusable parts □···· Tightening torque [N·m {kgf·cm}] A17865

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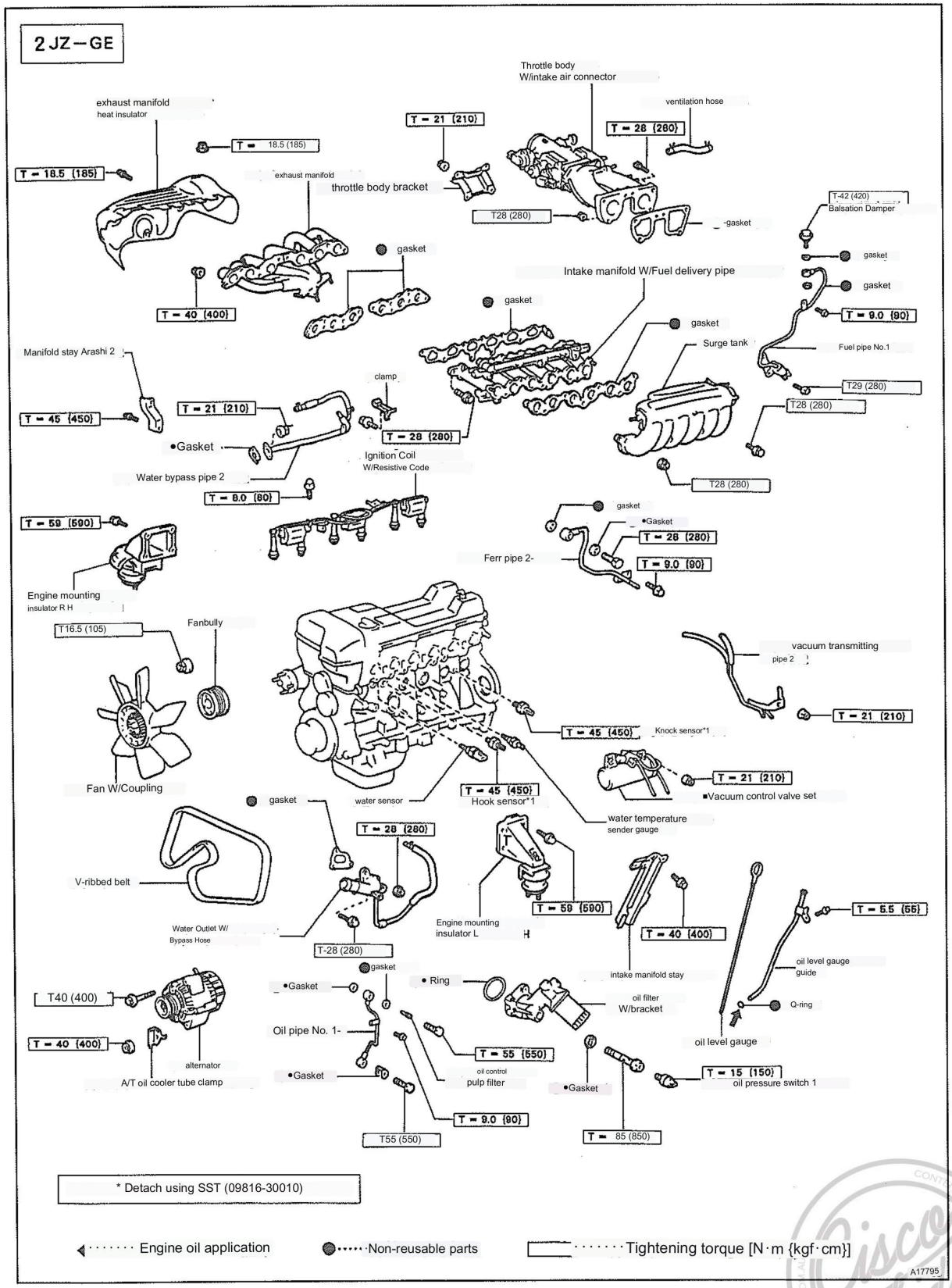

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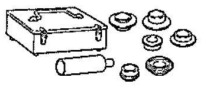
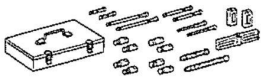
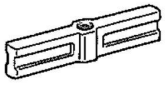
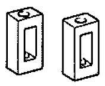
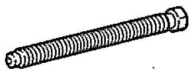
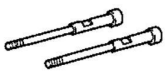
TC049512

engine body

supplies

2

SST

	09213-70010	crankshaft pulley holding tool	For fixing the crankshaft pulley
	(90105-08076)	BOLT	For fixing the crankshaft pulley
	09223-15030	Oil seal & bearing replacer	For installing engine rear oil seal
	09316-60011	TRANSMISSION & TRANSFER BEARING RIBRACER	
	(09316-00011)	Replacer pipe	For installing crankshaft front oil seal and camshaft oil seal
	(09316-00051)	Replacer D	For camshaft oil seal installation
	09330-00021	Companion Flange Holding Tool	For fixing the crankshaft pulley
	09950-50010	Blur C set	
	(09951-05010)	Hanger 150	For removing crankshaft pulley and crankshaft timing pulley
	(09952-05010)	Slide arm	For removing crankshaft pulley and crankshaft timing pulley
	(09953-05020)	Center bolt 150	For removing crankshaft pulley and crankshaft timing pulley
	(09954-05010)	Crow No.1	For removing the crankshaft timing pulley

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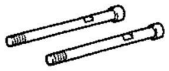
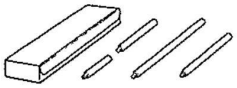
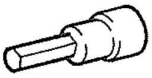
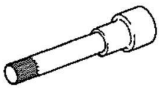
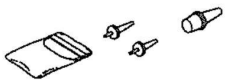
	(09954-05030) Crow No.3	For removing the crankshaft pulley
	09950-70010 Handle set	
	(09951-07100) Handle 100	When replacing the engine rear oil seal

2

tool

	09040-00010 Hexagon wrench set	
	(09043-20050) Socket Hex Wrench 5	Camshaft bearing cap No.3 for removal
Socket hexagon wrench 10 09043-20100	70026	For removing VVT-i
Straight hexagon wrench 14 09043-30140	70153	For removing VVT-i
	09043-50100 Double Hexagon 10 Wrench	For removal of cylinder head bolts
	09090-04020 Engine Sling Device	For removal of cylinder head
	09258-00030 Hose plug set	For hose airtightness
Deep socket wrench (14mm)	10203	For removal of exhaust front pipe
Hex Wrench (Width across flats 5mm)	10510	Timing belt cover No.2, No.3 脱着用
Hex wrench (width across flats 1.27mm)	10507	set when installing the timing belt tensioner. for

Fats and oils Other

engine hanger	55810	For cylinder head removal (12281-46050)
bolt	54643	For removal of cylinder head (90105-10345)
Toyota Genuine Auto Fluid Type T-I	30312	(Replacing fitment) 用
spindle oil or gasoline	32203	For oil seal lip application
seal packing black	50902	For applying cylinder head cover and camshaft bearing cap

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Adhesive 1324 50401	drive plate, torque converter set For coating when installing bolts
Toyota genuine long life coolant 32001	For cooling water replenishment
Sandpaper (#400) 50801	For crankshaft modification
paint 51102	For application when tightening cylinder head bolts
chalk 52802	For filling timing belt alignment marks
Toyota genuine engine oil 32103	For coating each part
Bolt (M18×P1.5) 90119-18001 54630	For removal of crankshaft pulley and crankshaft timing pulley
wire 52015	[For suspending A/C compressor
cutter knife 50601	For cutting oil seal lip

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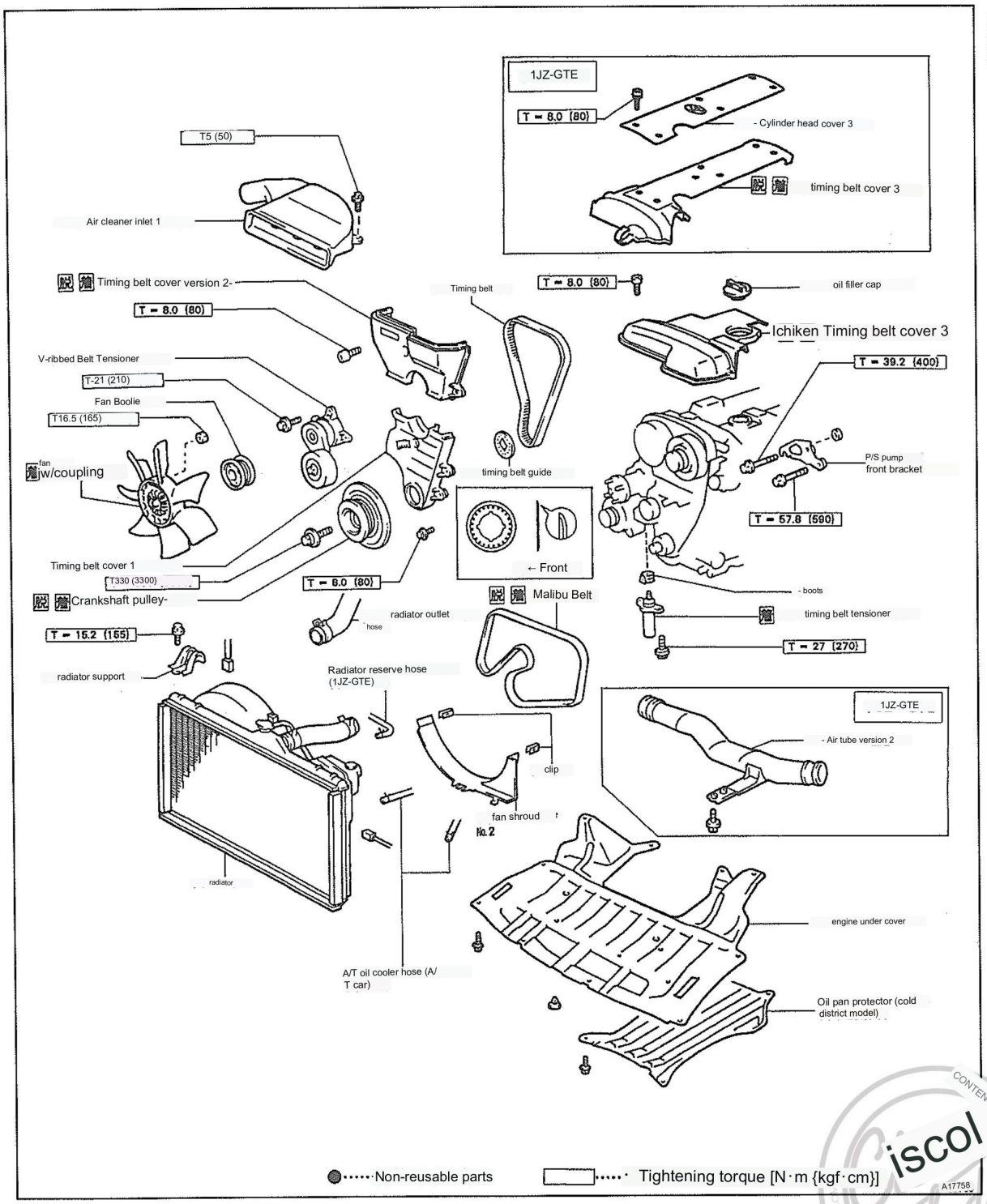
T0040513

Timing belt

Desorption configuration diagram

2



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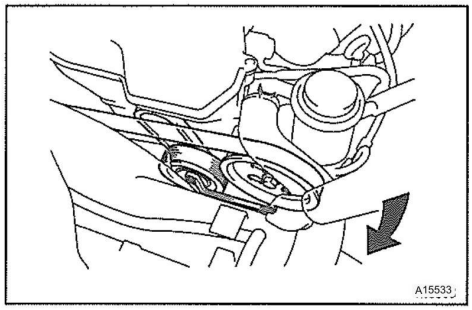


Precautions for removal work

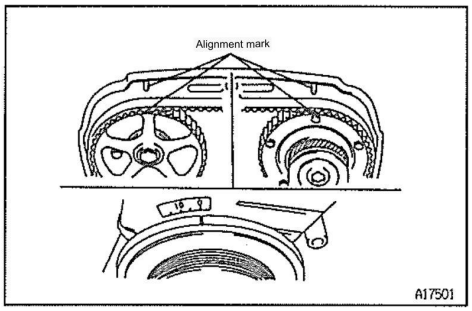
1 Remove the V-ribbed belt

- For V-ribbed belts, use an offset wrench (14mm) on the tensioner pulley set bolt to move the tensioner pulley to the left to loosen the tension and remove the belt.

<reference> After removing the belt, move the tensioner pulley to the right

Since it moves, set the position of the offset wrench as much as possible.

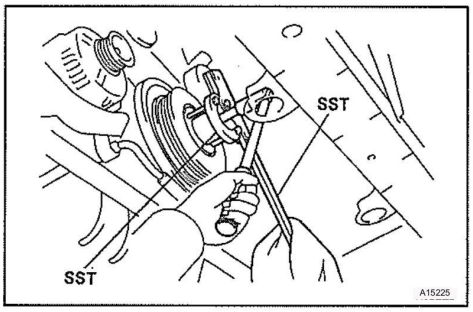
lower side.



2 Remove timing belt covers No. 3 and No. 2 · Use a hex wrench (two-sided) to remove timing belt covers No. 3 and No. 2 5mm width).

3 Remove crankshaft pulley

(1) Rotate the crankshaft clockwise and compress the No.1 cylinder to top dead center. to

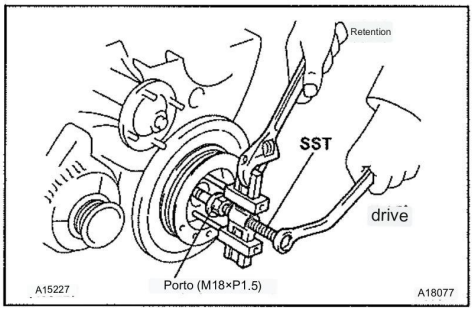


(2) Using SST, remove the crankshaft pulley set bolt.

SST

09213-70010 09330-00021 90105-08076

(3) Attach the prepared bolt (90119-18001: M18×P 1.5) to the crankshaft.



(4) Using SST, remove the crankshaft pulley. SST

09951-05010 09952-05010 09953-05020 09954-05030

CAUTION Apply grease to the threaded part and tip of the SST center bolt before using.

(5) Remove the prepared bolt (90119-18001: M18×P1.5).

4 Remove the timing belt

- Mark the direction of rotation with chalk on the back of the timing belt.

<Reference> This is done so that the contact of the timing belt does not change when it is reused.

Steamed noodles times
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Inspection before installing the timing belt

1 Timing belt idler inspection

(1) Rotate the timing belt idler by hand until it rotates smoothly.

To verify that.

(2) Confirm that grease is not splashed on the seal.

2

Precautions for installation work

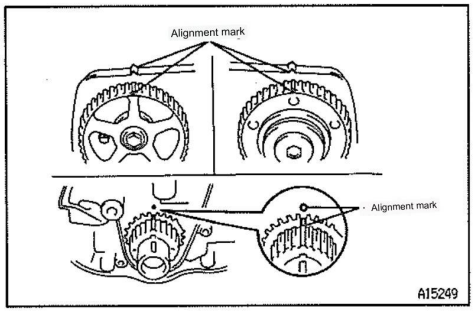
(Note) · If the timing belt and pulleys are found to be contaminated with water or oil, repair the wet or intruded areas and install a new timing belt.· Before installing each pulley, be sure to wipe off dirt with a waste cloth, etc. be. (do not wash)

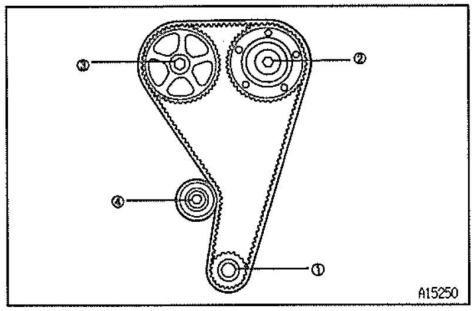
1 timing belt installation

(1) Check that the matching marks on the camshaft timing pulley and timing belt cover No. 4 are aligned.

(2) Alignment of crankshaft timing pulley and oil pump

Make sure the marks match.





(3) Check the direction of rotation of the timing belt and install each boot in the order shown.

Install the timing belt on the relay.

CAUTION Assemble the belt between the pulleys of the crankshaft, IN camshaft, and EX camshaft so that there is no slack in the belt.

2 Timing belt tensioner installation

(1) Remove the timing belt tensioner boot.

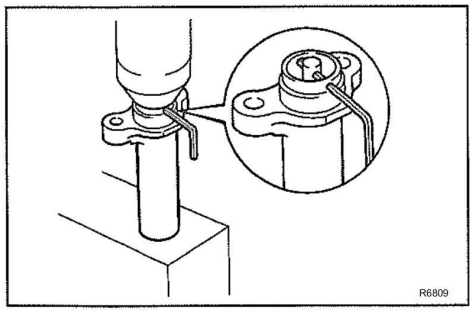
(2) Set the timing belt tensioner straight on the press. (3)

Release the timing belt tensioner rod as slowly as possible.

Compress, align the holes of the rod and cylinder, and pass a hexagon wrench with a width across flats of 1.27 mm through the rod and cylinder.

注意 • Do not apply more than 9.8kN {1000kgf) to the rod.· When installing the boot, do not let the tip of the hexagon wrench protrude from the cylinder as it may damage the boot.

<Reference> When aligning the holes of the rod and the cylinder, insert a hex wrench into the cylinder during the compression process, of the rod.



(4) Release the compression and press the timing belt tensioner

Remove.

(5) Attach the boot to the tensioner.

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2

(6) Turn off the timing belt tensioner with the hex wrench.
Install it to the installation position of the oil pump, and tighten the two bolts evenly.

•Caution If the timing belt tensioner is installed at an angle, it will not function properly.

Tighten the bolts evenly. (7) Confirm that there is no gap between the oil pump and the boot in the state of (6).

[Caution] If there is a gap, it may cause water to enter.

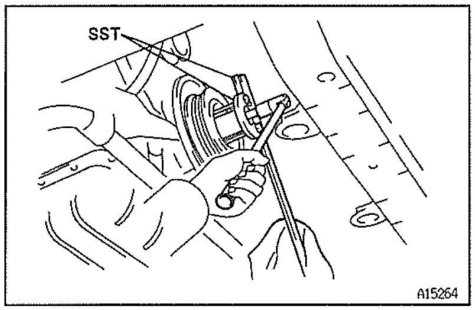
do business.

(8) Use the hex wrench for fixing the rod of the timing belt tensioner.
Pull out and remove.

(9) Temporarily install the crankshaft pulley bolt with a washer or the like, rotate the crankshaft twice in the forward rotation direction, and align the alignment marks on the crankshaft timing pulley and the oil pump. Check that the matching marks on the timing belt cover No. 4 are aligned.

do.

(10) Remove the crankshaft pulley bolt and washer.



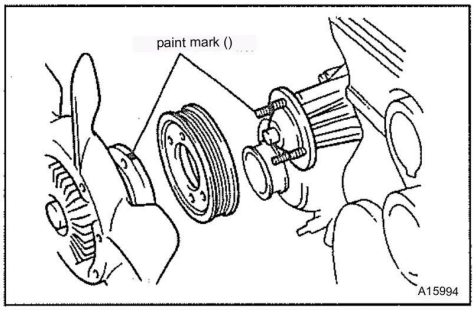
3 Install the crankshaft pulley

- Install the crankshaft pulley using SST. SST

09213-70010 09330-00021 90105-08076

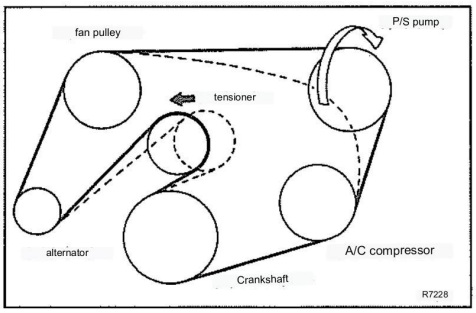
4 Install timing belt cover No. 2 and No.3

- Timing belt covers No.2 and No.3 are 5mm width).



5 FAN W/COUPLING INSTALLATION

- Install the fan W/coupling by aligning the alignment marks (black color) on the end of the stud bolt of the water pump and the surface of the coupling shaft.



6 V-ribbed belt installation

(1) Put the belt on other than the P/S pump pulley.

CAUTION Place the tensioner pulley on the back side of the belt.

(2) Offset wrench (14 mm) and move the tensioner to the left to loosen the belt.

(3) Put the belt on the P/S pump pulley in the state of (2).

注意 Make sure the belt on each pulley is set correctly.

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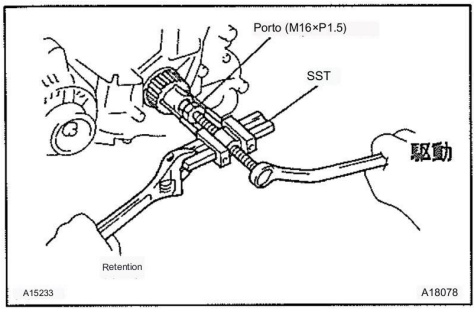


crankshaft front oil seal

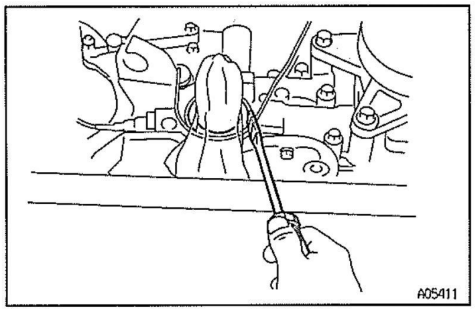
Precautions for desorption work

1 Remove and install the timing belt
(Refer to "Engine Body" and "Timing Belt")

2 Remove the crankshaft timing pulley · If the timing pulley cannot be removed by hand, remove the crankshaft
Attach the prepared bolt (90119-18001: M18×P1.5) to the
Remove using SST.

SST 09951-05010 09952-05010 09953-05020 09954-05010

•Caution Apply oil to the threads and tip of the SST center bolt.



3 Crankshaft front oil seal replacement
(1) Cut off the lip with a utility knife.
(2) Wrap the screwdriver with vinyl tape and pry off the oil seal.

Note After removing the oil seal, check that there are no scratches on the chamfered portion of the crankshaft. If you have plums, sandpaper (#400) to fix it.

(3) Apply a small amount of MP Grease No. 2 to the lip of a new oil seal to have.

prevent chips and dust from adhering to the lip.

(4) Using SST, press the oil seal against the oil pump housing.
Hammer it in until it fits. SST

09316-00011

•Caution · Do not drive the oil seal diagonally.· Wipe off any grease on the crankshaft.

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recollection times

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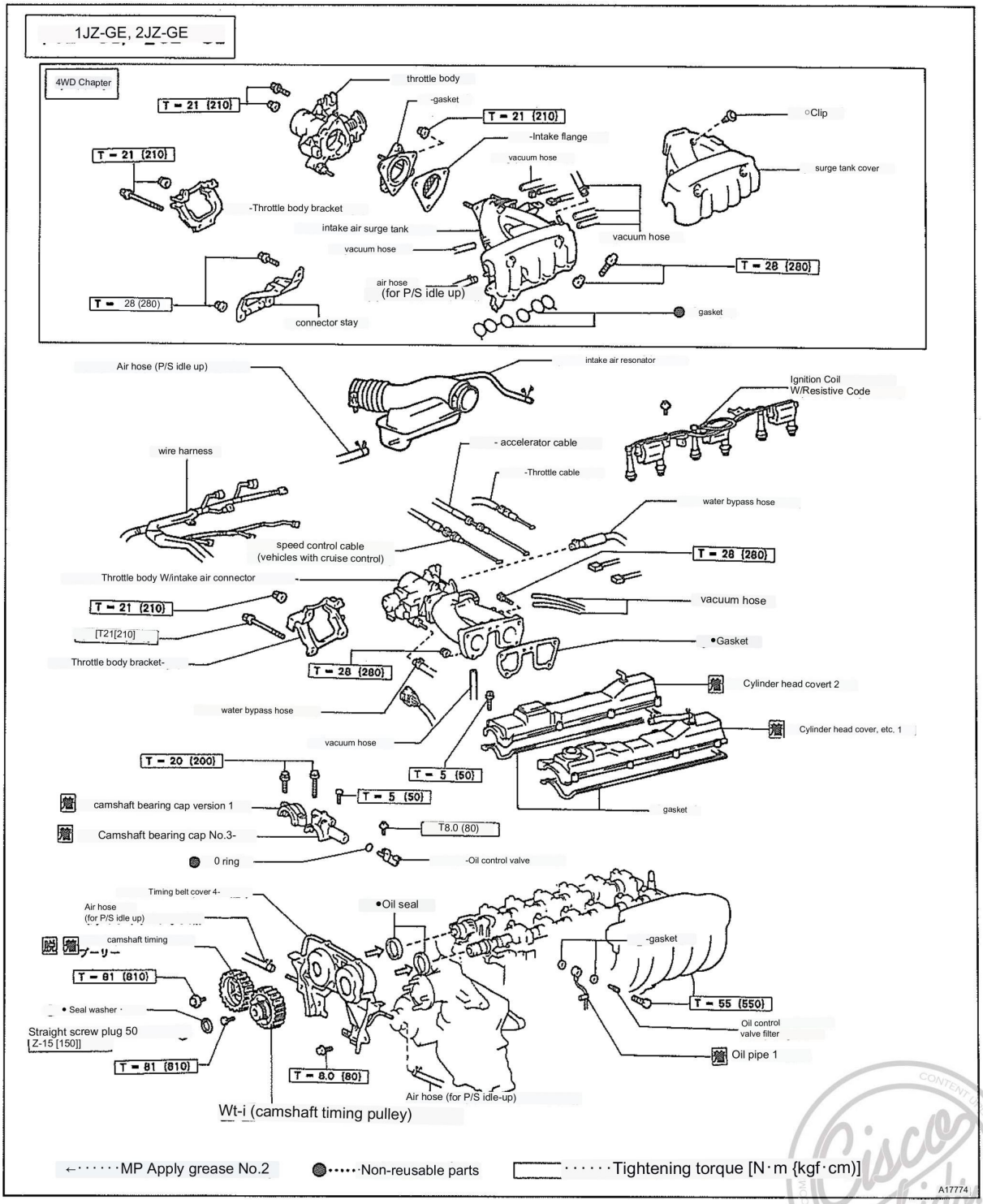
camshaft oil seal

Desorption configuration diagram

2

1JZ-GE, 2JZ-GE



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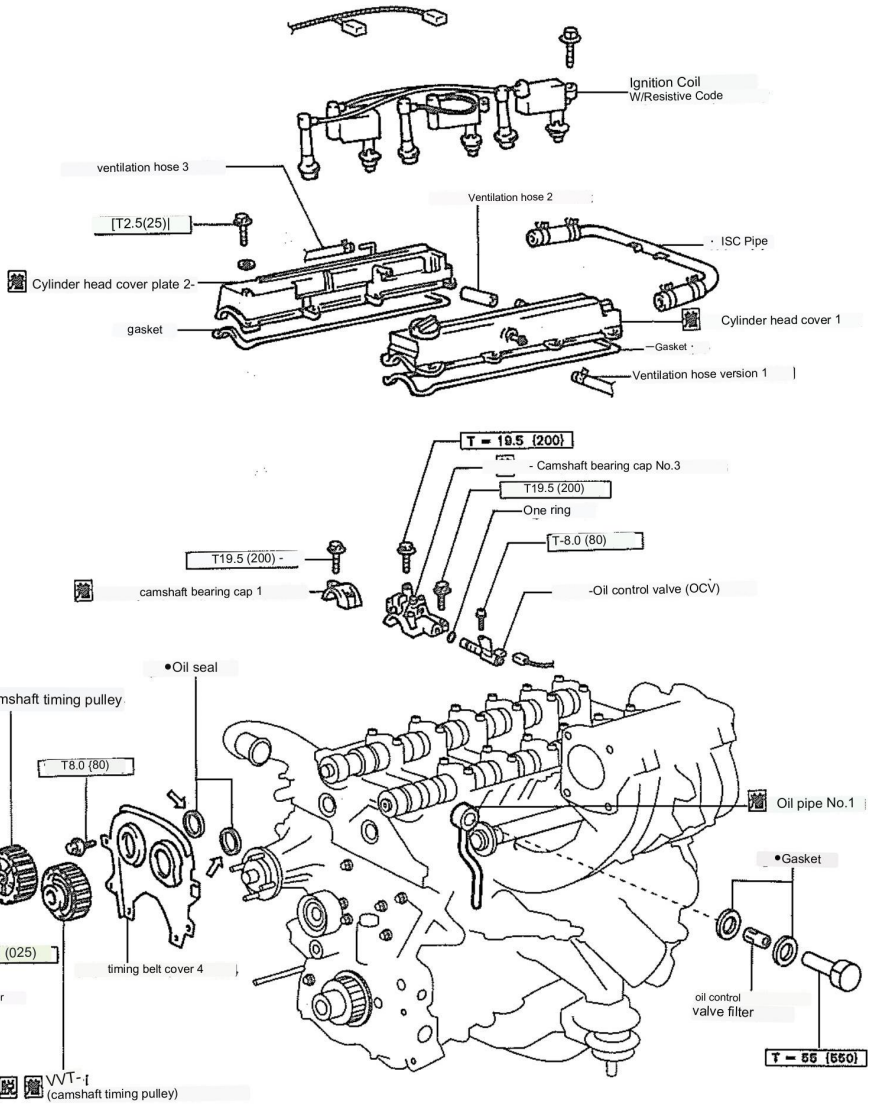
1JZ-GTE



←· · · · MP Apply grease No.2 ●····· Non-reusable parts [ ]····· Tightening torque [N· m {kgf·cm}]

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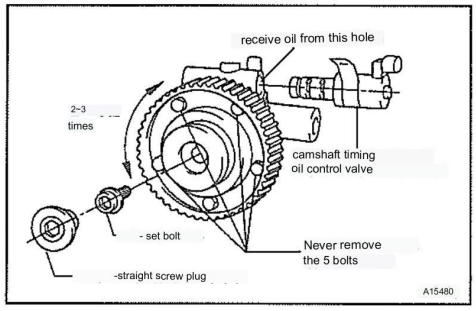
2

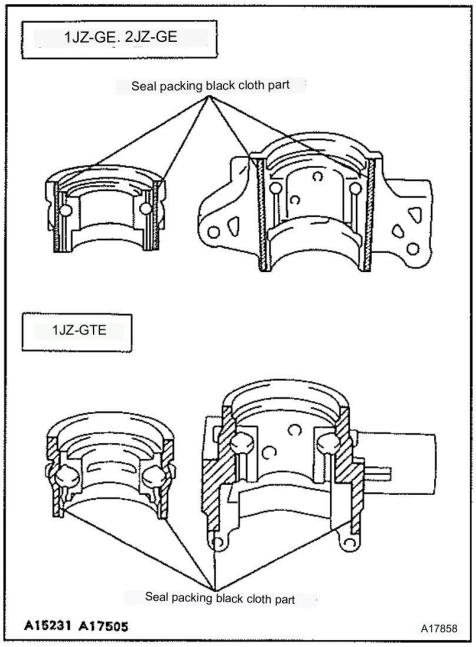
Precautions for desorption work

1 Remove and install the timing belt
(Refer to "Engine Body" - "Timing Belt")

2 Remove and install the camshaft timing pulley
· When removing and installing the camshaft timing pulley,
Use the service hexagon to fix the camshaft.

3 Remove VVT-i (camshaft timing pulley)
注意 · Never remove the five bolts shown in the figure because they determine the backlash of the timing pulley gear. If removed, replace the camshaft timing pulley ASSY.
· When removing the straight screw plug, be sure to follow the procedure as there is a risk of oil spilling onto the timing system parts.
I do.
(1) Remove bolts and camshaft timing oil control
Remove the valve.
(2) Move VVT-i back and forth 2 to
せ, 3 times left and right within the variable range (30° (60°CA)).
(Reference) About 20mL of oil is discharged.
(3) Remove the straight screw plug and seal
washer using a straight hexagon wrench 14.
(Note:) A small amount of oil may spill out, so work with a waste cloth on the underside of the plug.
(4) Fix the camshaft using the service hexagon part of
the camshaft, remove the set bolt using a socket hexagon wrench 10, and remove VVT-i.





4 Replace camshaft oil seal
(1) Apply a small amount of MP Grease No.2 to the lip of a new oil seal, and insert it into the camshaft from the lip side.
注意 · Do not invert the lip.
· Firmly insert it to the deepest part of the cylinder head.

5 Install camshaft bearing caps No. 1 and No.3
(1) Apply seal packing black (2mm inside) to the locations shown in the figure on camshaft bearing caps No. 1 and No. 3.
注意 · Degrease the mounting surface.
· Install within 5 minutes after applying seal packing.
· Do not start the engine within 2 hours after installation.
· Do not apply more than 2mm of seal
packing
(2) Install camshaft bearing caps No.1 and No.3.

repatriation
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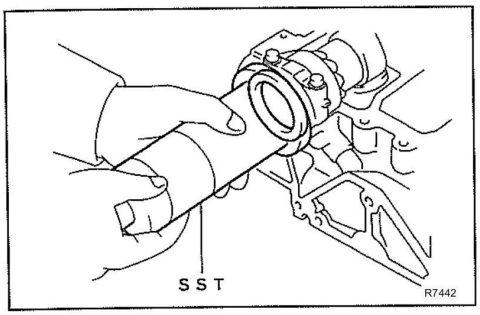
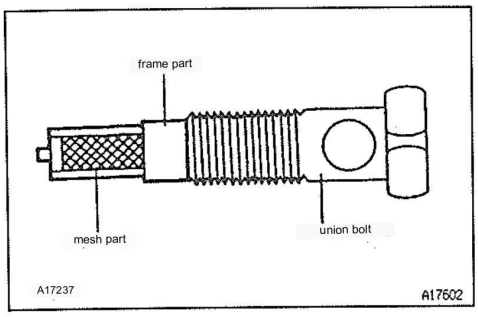


(3) Using SST, push the oil seal to the deepest part of the cylinder head.

put in.

SST 09316-00011 09316-00051

注意 Do not hit the SST hard.



6 Install oil pipe No.1

(1) Attach the oil control valve filter to the union bolt.

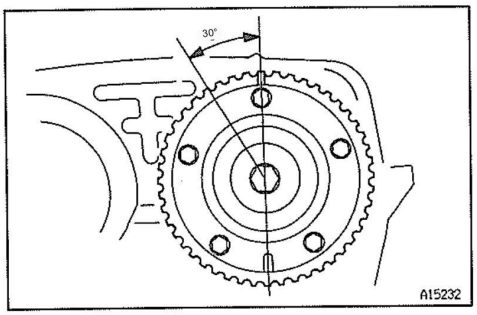
Install as shown. · When

注意 touching the main unit, avoid the mesh part and grab the frame part.

make it

· As shown in the figure, set the filter on the union bolt and

Attach to shaft bearing cap NO.3.



7 VVT-i (camshaft timing pulley) installation (1)

Align the camshaft straight pin with the VVT-i installation hole,

Push VVT-i by hand until it feels like it's bottoming out.

(2) Fix the camshaft using the service hexagon part of the

camshaft and set it using a socket hexagon wrench 10.

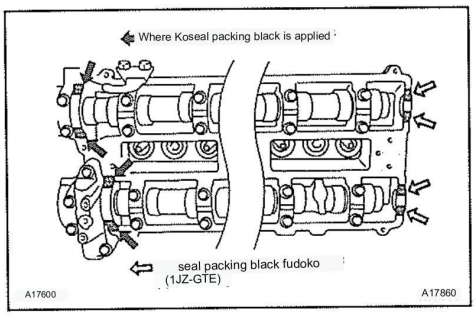
Install bolts. (3) Confirm

that the circumference of VVT-i rotates lightly within the

range of 30°C. (4) Attach the straight screw plug to the set bolt

through the seal washer using a straight hexagon wrench 14.

Kick.



8 Cylinder head cover No. 1 and No. 2 installation

●Cylinder head cover No. 1 and No. 2 are installed after applying seal

packing black to the locations shown in

the figure. ●Caution · Degrease the

mounting surface. · Install within 5 minutes after applying

seal packing. · Do not start the engine within 2 hours after installation.

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recollection times

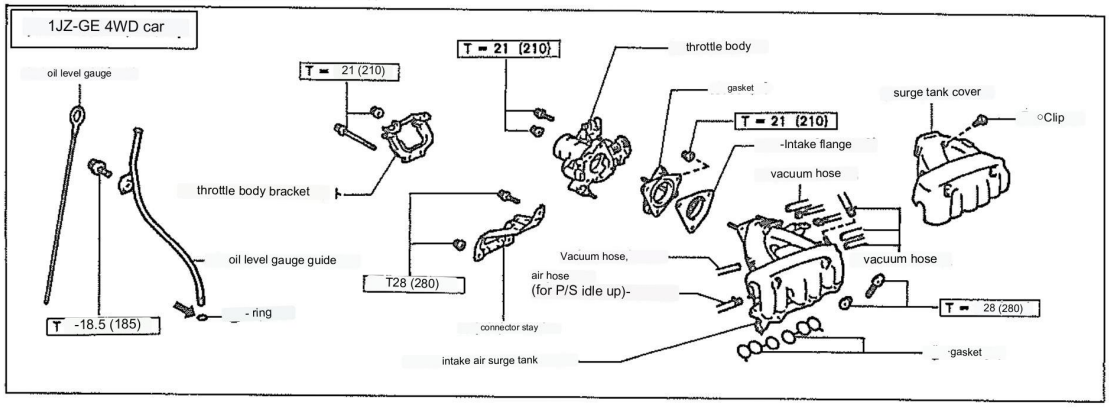
T0040515

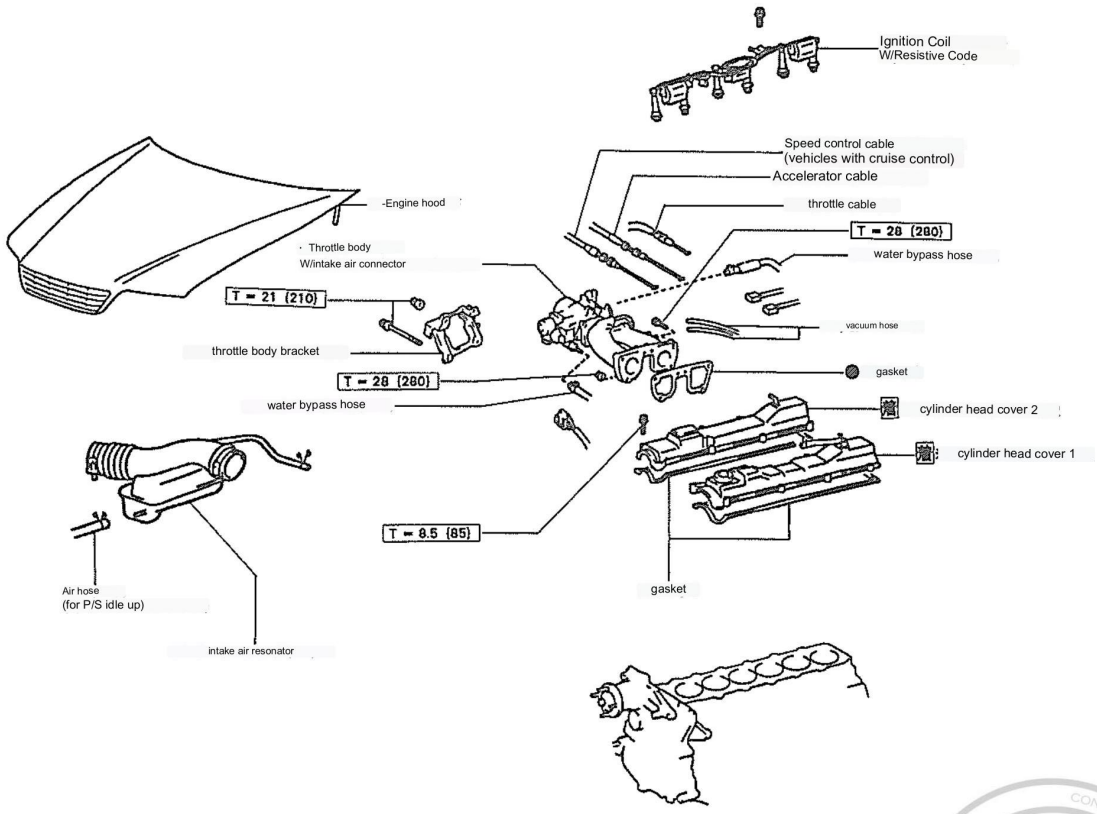
cylinder head gasket

Desorption configuration diagram

2

1JZ-GE, 2JZ-GE 2





Engine oil application Non-reusable parts Tightening torque [N·m {kgf·cm}]

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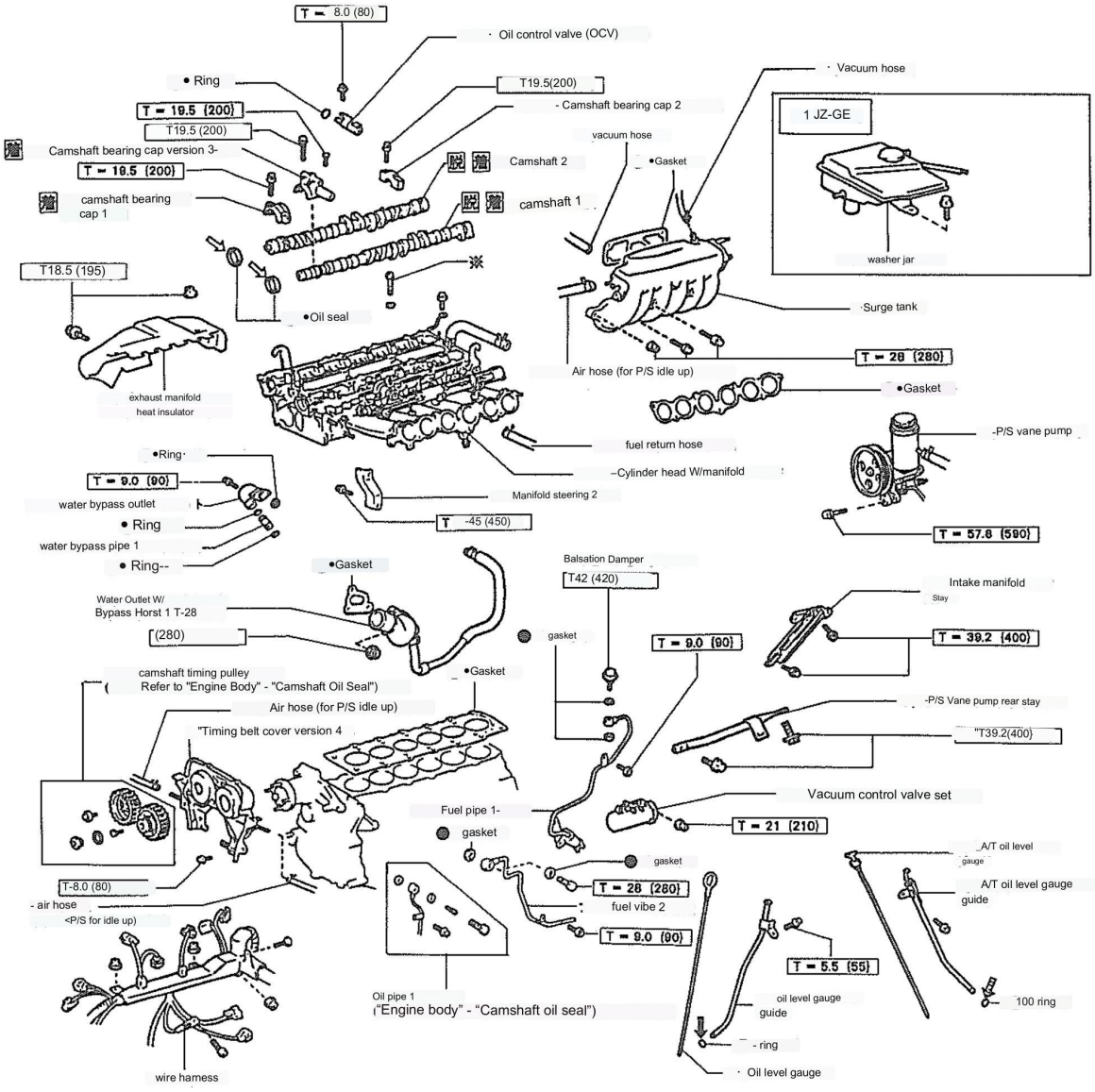
1JZ-GE, 2JZ-GE configuration diagram 2/2



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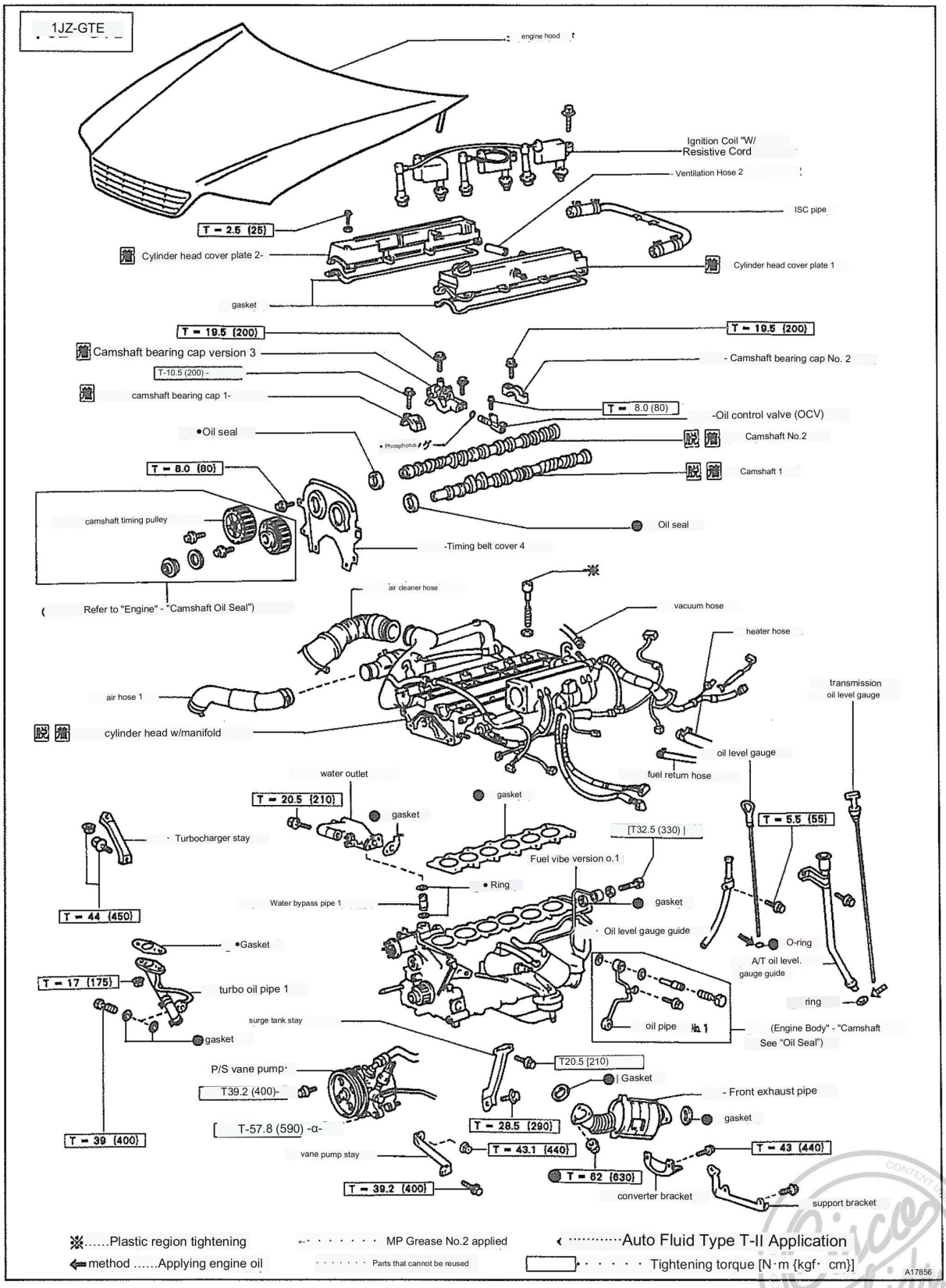

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Precautions for removal work

1 Fuel Spill Prevention Work

(Refer to "Engine control system" - "Fuel spill prevention work")

2 Remove the timing belt

(Refer to "Engine Body" and "Timing Belt")

3 Camshaft timing pulley and VVT- (Kamshaf i timing pulley) Remove

("Engine body" - "Camshaft oil seal" "Notes on removal work 2, 3")

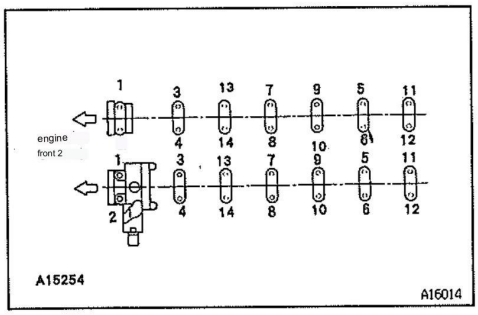
4 Remove the camshaft

(1) Place the camshaft bearing caps evenly on the left and right in the order shown in the figure.

Loosen in batches.

(2) Remove the camshaft bearing cap. (3)

Remove the camshaft and remove the oil seal.



5 Remove the cylinder head

(1) To remove and install the cylinder head, engine hanger No.1 is

required as a spare item. (Excluding 1JZ-

,GTE) Engine Hanger No.1 12281-46050

Bolt 90105-10345

T=40N•m {408kgf•cm}

<Reference> Attach the engine hanger No.1 to the cylinder head.

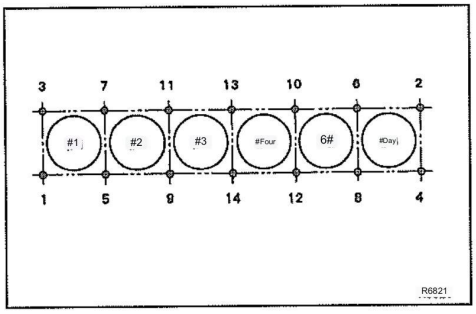
(2) Using a double hexagon wrench (10mm), loosen and remove

the cylinder head bolts evenly in several steps in the order shown.

(3) Attach the engine sling device to the engine hanger,

Remove the cylinder head using a chain block.

(4) Remove the gasket.



Pre-installation inspection

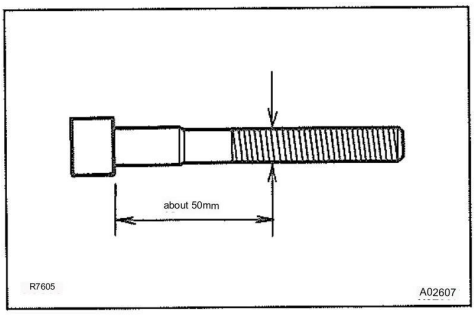
1 Cylinder head bolt inspection

(1) Using a vernier caliper, measure the outside diameter of the cylinder head bolt at the point shown in the figure.

Measure.

Standard value 10.8~11.0mm

Limit 10.7mm



Precautions for installation work

1 Cylinder head installation

CAUTION · Wash the bottom surface of the cylinder head and the top surface of the cylinder block.

I do.

- Tighten the cylinder head bolts (5), (7), and (8) in the order shown in the figure.

Tighten with·

Tighten the cylinder head bolts using the plastic region tightening method.

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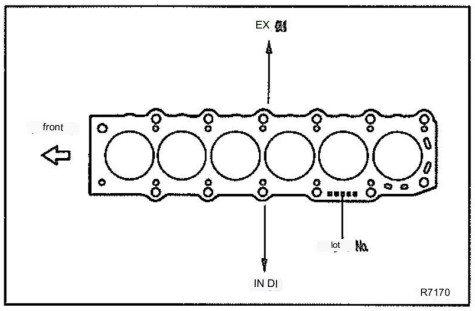
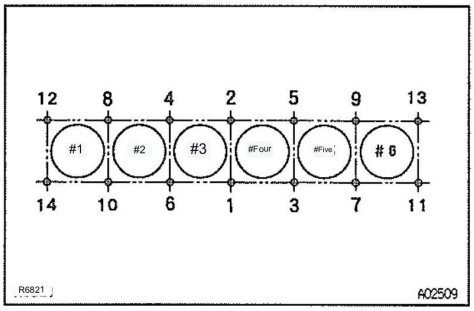


(1) Install a new head gasket to the cylinder block with the lot number facing the cylinder head as shown in the figure. · Does not

注意 damage the gasket surface coating. · Do not allow foreign matter to enter between the top and bottom of the gasket.



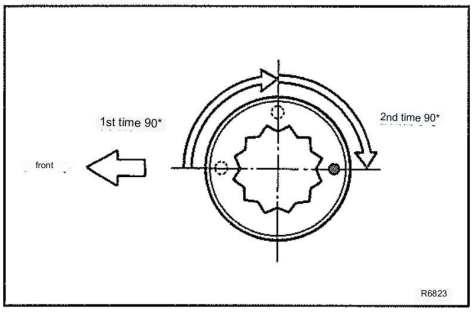
(2) Install the cylinder head to the cylinder block. (3) Apply a small amount of engine oil to the bolt threads, bearing surfaces, and washers.

apply lu.

(4) Attach the washer to the bolt and insert it into the cylinder head. (5) Using a double hexagon wrench (10mm), temporarily tighten the 14 head bolts in the order

shown in the figure two or three times, and then tighten them to the specified torque.

T=34.5N·m {350kgf·cm}



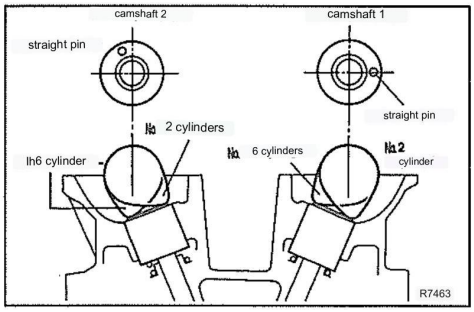
(6) Paint the engine front side of the cylinder head bolt head mark.

(7) Using the paint marks as a guide, tighten each head bolt 90°.

be.

(8) Tighten each head bolt by 90°.

(9) Confirm that the paint mark is on the rear side of the engine.



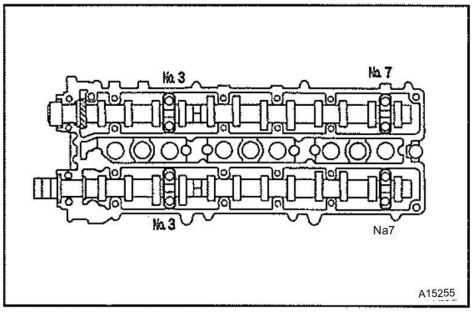
2 Camshaft installation

(1) Lubricate the camshaft journal and bearing with engine oil.

apply.

(2) Place the camshaft No. 1, No. 2, No. 2, No. 6, cylinder cam nose and straight pin on the front side of the camshaft in the position shown in the figure and place them lightly on the cylinder head.

(3) Lightly press camshafts No. 1 and No. 2 toward the front without applying excessive force.



(4) Apply a small amount of engine oil to the bolt threads.

(5) Install the No. 3 and No. 7 journal camshaft bearing caps, and temporarily tighten them evenly several times until the caps meet the cylinder head mating surfaces, allowing the camshafts to sink in smoothly.

(6) Apply MP Grease No.2 to the new oil seal lip and insert it into the camshaft from the lip side.

注意 Do not invert the lip.

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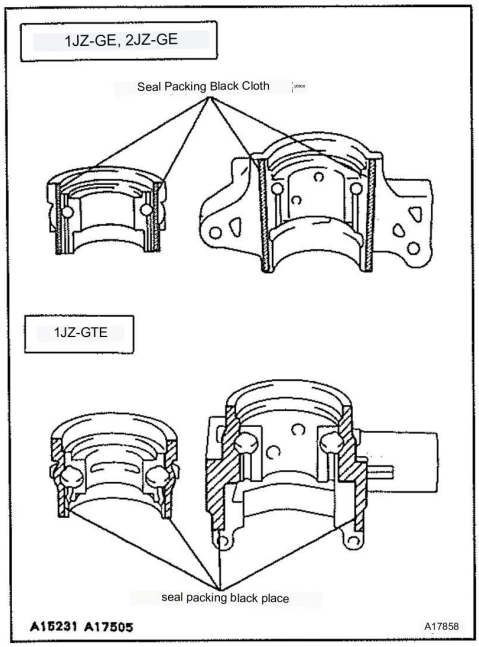


(7) Attach the seals to the camshaft bearing caps No. 1 and No. 3 as shown in the diagram.

Apply Lupacking Black (2mm inside).

注意

- Degrease the area where the seal packing is applied.
- Install within 5 minutes after applying seal packing.
- Make sure that the seal packing does not protrude inside the bearing cap.

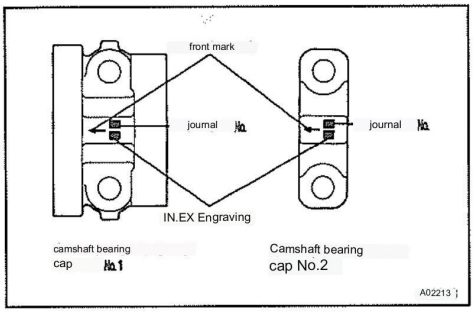
apply.

- Do not start the engine within 2 hours after installation.

be.

- Do not apply more than 2mm of seal packing.

2



(8) Temporarily attach the remaining camshaft bearing caps. Note Make

注意 that the mounting direction and mounting position of the bearing cap are

No mistake.

〈参考〉 Engraving for identification on the upper part of the bearing cap

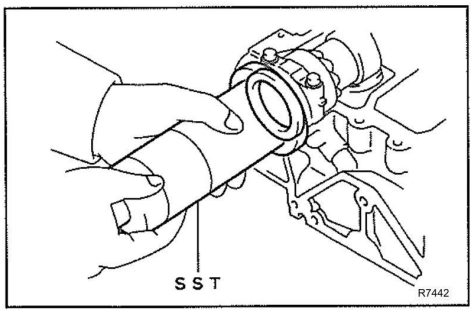
IN JU bearing cap No.2 12~17

EX side bearing cap No. 1 E1

Bearing cap No.2·····E2~E7

(9) Apply a small amount of engine oil to the bolt threads.

(10) Temporarily tighten the camshaft bearing cap evenly.

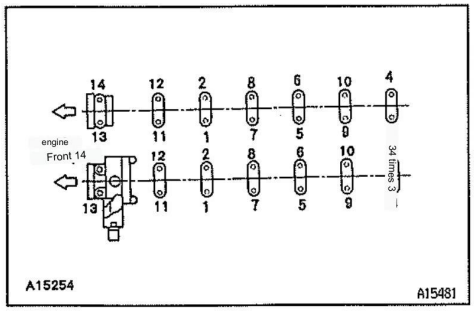


(11) Using SST, install the oil seal to the deepest part of the cylinder head.

push in.

SST 09316-00011 09316-00051

Do not hammer the main oil seal.



(12) Tighten to the specified torque in three steps in the order shown in the figure.

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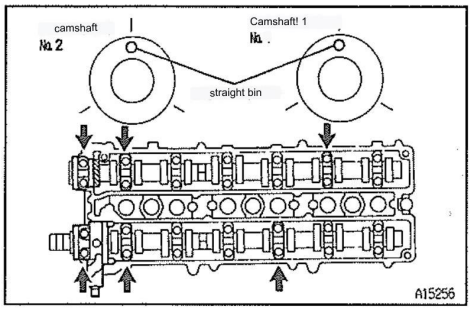
2

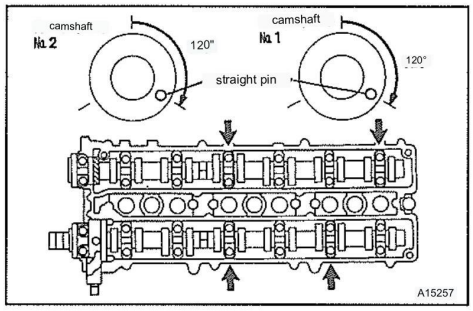


(13) Using the camshaft No. 1 and No. 2 service hexagons, position the straight pin on the front side of the camshaft straight up.

(14) Tighten the two bearing cap bolts as shown in the figure until they can be turned by hand. and tighten again in 3 steps.

(15) Using socket hexagon wrench 5, tighten the two bolts on the rear side of bearing cap No.3.· Do not loosen the bolts too much.

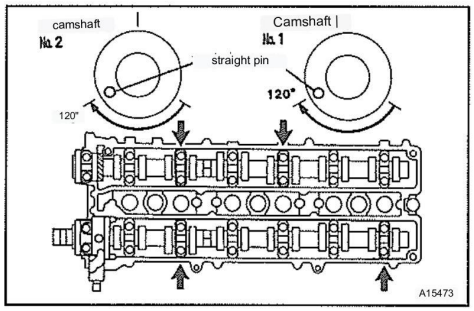
· Loosen and tighten each bearing cap.



(16) Rotate the camshaft 120 degrees in the forward rotation direction.

(17) Tighten the two bearing cap bolts in the position shown in the figure until they can be turned by hand. and tighten again in 3 steps. Do not over loosen the bolts.·

Loosen and tighten each bearing cap.



(18) Rotate the camshaft 120 degrees in the forward rotation direction.

(19) Just turn the two bolts of the bearing cap shown in the figure by hand. and tighten again in 3 steps. Porto is not too loose.·

Loosen and tighten each bearing cap.

3 Install oil pipe No.1

"Engine body" - "Camshaft oil seal"

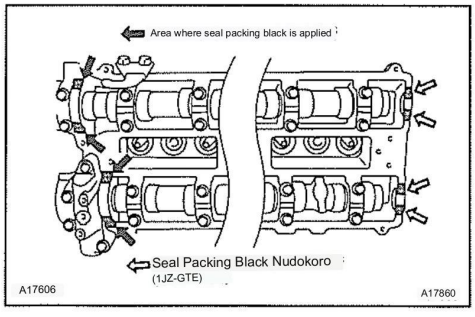
"Notes on desorption work" special

4 VVT-i (camshaft timing pulley) installation

(Refer to "Engine" - "Camshaft Oil Seal" - "Precautions for Installation/Removal Work 7")

5 Timing belt installation

(Refer to "engine body" and "timing belt")



6 Install cylinder head covers No.1 and No.2

• For cylinder head covers No. 1 and No. 2, degrease the seal packing and and install it after applying the black.

mounting surface at the locations

· Install within 5 minutes after applying seal packing.

shown in the figure.· Do not start the engine within 2 hours after installation.

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engine rear oil seal

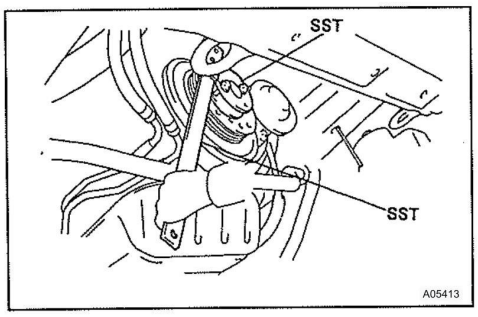
Precautions for desorption work

1 Automatic transmission desorption

(Refer to "Automatic Transmission" - "Transmission ASSY")

2 Manual transmission removal and installation (1JZ-GTEM/T car)

(Refer to "Manual Transmission" - "Transmission ASSY")



3 Remove and install drive plate or flywheel

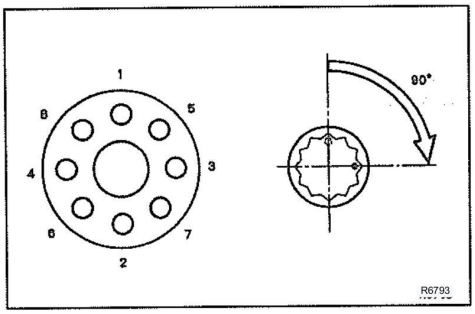
Note · The flywheel set bolt cannot be reused.

· Flywheel set bolts are tightened using the plastic region tightening method.

be.

- The drive plate or flywheel set bolts are removed using SST while holding the crankshaft. SST

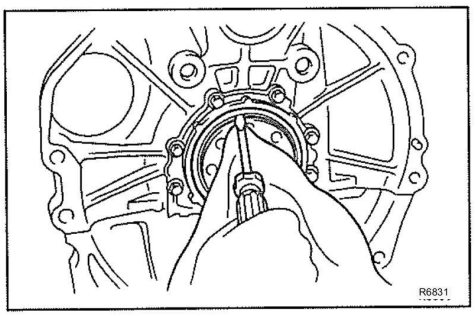
09213-70010 09330-00021 90105-08076



- For the set bolt, apply Adhesive 1324 to 2 to 3 threads from the tip of the bolt and tighten in the order shown in the figure. T=83.4N·m {850kgf·cm} (drive plate) T=50.0N·m {500kgf·cm} (flywheel) ·

·Degrease the bolts and bolt holes.· Do not start the engine within 1 hour after installation.· After tightening the flywheel set bolt, apply a paint mark to the upper part of the bolt head and tighten it further 90 degrees in the order shown in the figure.

After tightening, all paint marks should be on the right side.

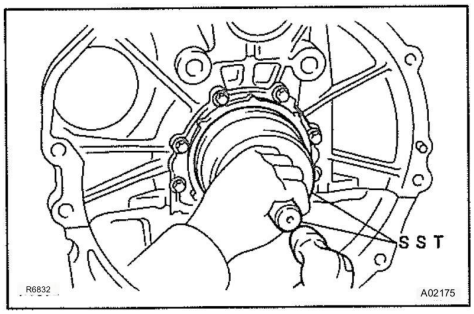


4 Remove and install the engine rear oil seal

(1) Cut off the lip with a utility knife.

(2) Wrap vinyl tape around the screwdriver, put a waste cloth against the crankshaft, and pry off the oil seal to remove it.

Note: After removing the oil seal, check that there are no scratches on the chamfered portion of the crankshaft. If there are scratches, fix them with sandpaper (400).



(3) Apply MP Grease No.2 to the lip of the new oil seal.

CAUTION Do not allow chips or dust to adhere to the lip. (4) Drive in the oil seal using SST.

S S T 09223-15030 09951-07100

Caution · Do not drive the oil seal diagonally.

UPL · Wipe off any grease on the crankshaft.

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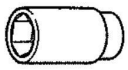
T0048774

lubrication

supplies

2

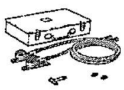
S S T

	09228-07501	oil filter wrench	For oil filter removal
	09816-30010	oil pressure switch socket	For removal of oil pressure switch

tool

Socket wrench (30mm) 09011-12301	70004	For removal of oil cooler relief valve

instrument

	OPG-210 ATG-100	automatic transmission oil pressure gauge set (*)treated as banzai Handled by Iyasaka Co., Ltd.	for oil pressure measurement
	(OPG-230) (ATG-OP20)	Adapter D (*)Treated by Banzai Treated by Iyasaka Co., Ltd.	for oil pressure measurement

Fats and oils Other

Adhesive 1324	50401	For oil pressure switch application
Toyota genuine engine oil	32103	Replenishment

recollection times

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T0040770

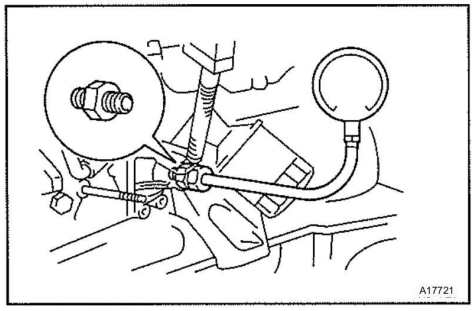
Functional check

oil pressure check

Standard value

engine revs	Oil pressure [kPa {kgf/cmi}]
at idle rotation	78 {0.8) or more
Hold at 3000r/min	324 {3.3) or more

2


A17721

the point

1 Check engine oil

2 Oil pan protector (cold region model) and engine dark cover removal

Remove the oil pressure switch 3

SST 09816-30010

4 Oil pressure gauge installation

(1) Install the oil pressure gauge through the adapter.

5 engine machine

6 oil pressure measurement

Install oil pressure switch

(1) Degrease the threads of the oil pressure switch. (2)

Apply Adhesive 1324 to the threads of the oil pressure switch.

to clothe

S S T 09816-30010

T=14.7N•m {150kgf•cm}

注意 Do not start the engine within 1 hour after installation.

(3) Connect the connector.

9 Engine undercover and oil pan protector (寒

Cold district specification vehicle) Installation

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recollection times

T0048778

oil filter & Union

Precautions for desorption work

1 Remove and install oil filter

(1) Remove the oil filter using SST.

SST 09928-07501

(2) Remove leaks and foreign matter from the mounting surface on the engine side.

(3) Apply a small amount of engine oil to the O-ring of the new oil filter.

apply.

(4) Install by hand until the O-ring touches the mounting surface.

(5) After the ring hits the mounting surface, rotate it further by 3/4 turns SST.

tighten

CAUTION Wipe up any spilled oil with a rag.

2 Union desorption

(1) Remove the oil pressure switch using SST.

SST 09816-30010

(2) When installing, apply Adhesive 1324 to the threads.

T=15N•m {150kgf•cm}

(3) Detach the union.

T=78.5N•m {850kgf•cm}

T0048777

oil pump

Since the oil pump (oil pan and oil strainer) cannot be removed from the vehicle, refer to the engine repair manual.

recollection times

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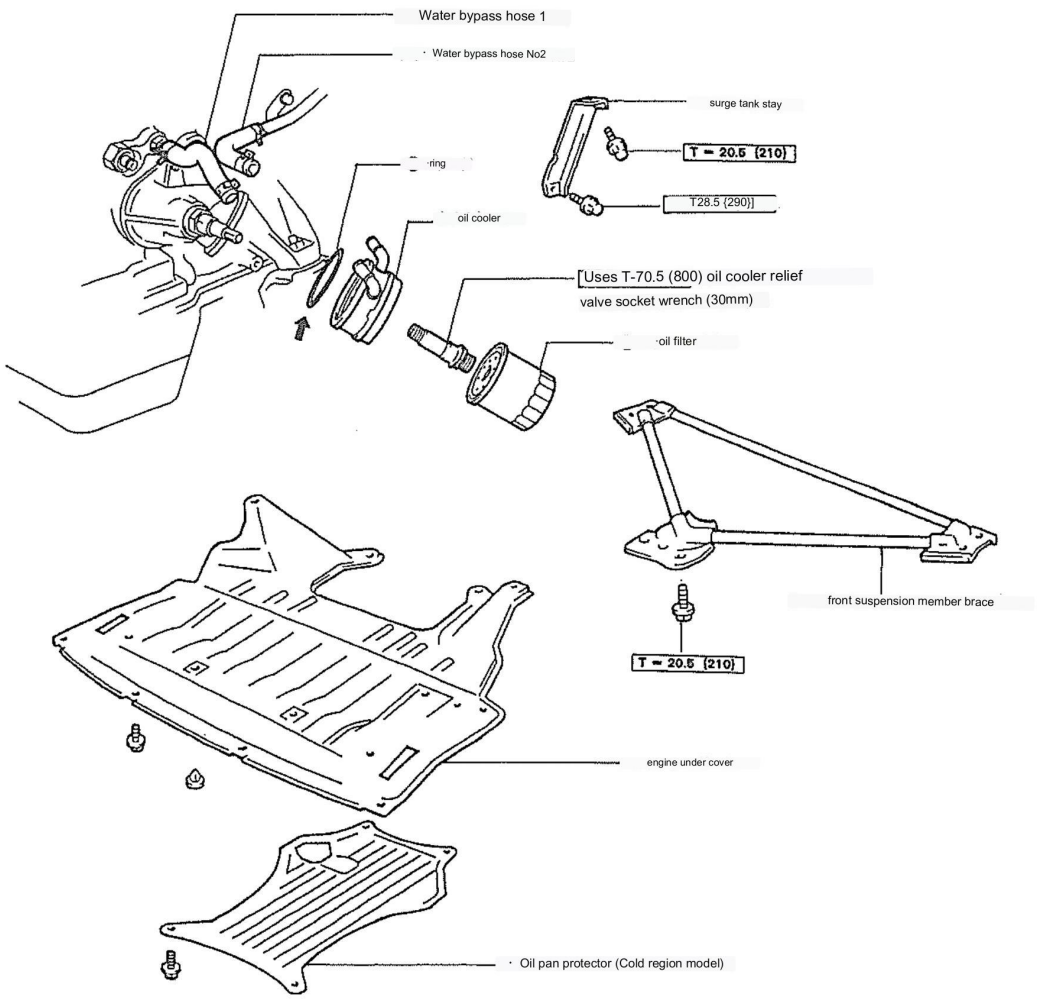
TO048710

Oil cooler (1JZ-GTE)

Desorption configuration diagram

2



applying engine oil Non-reusable parts Tightening torque [N· m {kgf· cm}]

A17703

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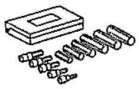
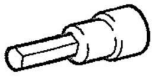
TD045770

Cooling

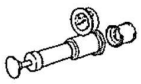
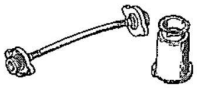
supplies

2

tool

	09040-00010	Hexagon wrench set	
	(09043-20100)	Socket Hex Wrench 10	For removal of timing belt idler

instrument

	09082-00012	Toyota Electrical Tester	For inspection of each part
	RCT-2A RCT-2	radiator cap tester Handled by Banzai Handled by Iyasaka Co., Ltd.	For water leak inspection
	RCT-2A-30S RCT-2-AST	Radiator Cap Tester Adapter Set A Treated as Banzai Handled by Iyasaka Co., Ltd.	For water leak inspection
temperature gauge		21701	for water temperature check

Fats and oils Other

Toyota genuine long life coolant	32001	Replenishment
soapy water	32601	○For ring coating

recollection times

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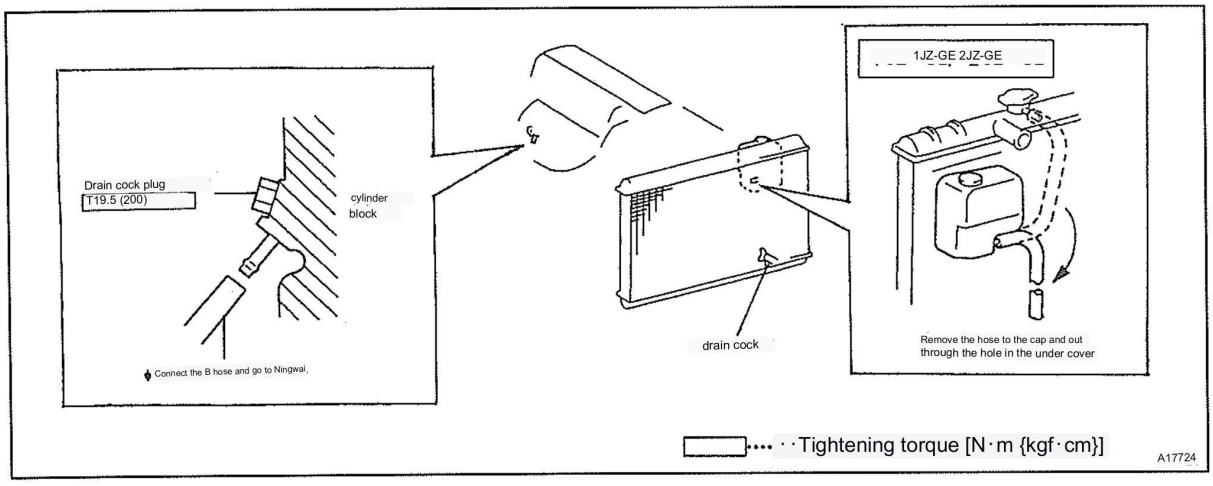
T0048784

Cooling water exchange

1 Drain the cooling water from the location shown in the figure.



T0048780

Functional check

Cooling system leak check

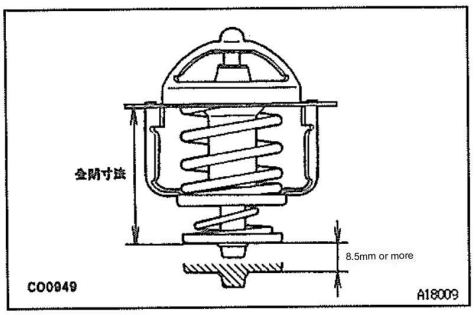
(1) Fill up the cooling water and attach the tester.

(2) Apply a pressure of 118kPa {1.2kgf/cm} and confirm that there are no water leaks in each part.

TOD45753

Unit inspection

Thermostat



1 Operation check

(1) Soak the thermostat in water and heat it gradually.

(2) Measure the temperature at which the valve starts to open and when it is fully open.

Standard temperature: Opening start temperature 80~84℃)

full open temperature: 95℃

(3) Pull up the thermostat and quickly measure

the fully open

〈参考〉 dimension. Standard height 8.5 mm or more

be.

radiator cap

1 Valve opening

pressure check (1) Using a tester, pressurize the cap and check the valve opening

注意 pressure. When attaching the cap to the tester, do not allow water to enter the sealing part of the cap.

apply.

Standard value 74~103kPa {0.75~1.05kgf/cm²)

limit (2) 59kPa {0.6kgf/col}

Confirm that the pressure is maintained in the state of (1).

recollection times
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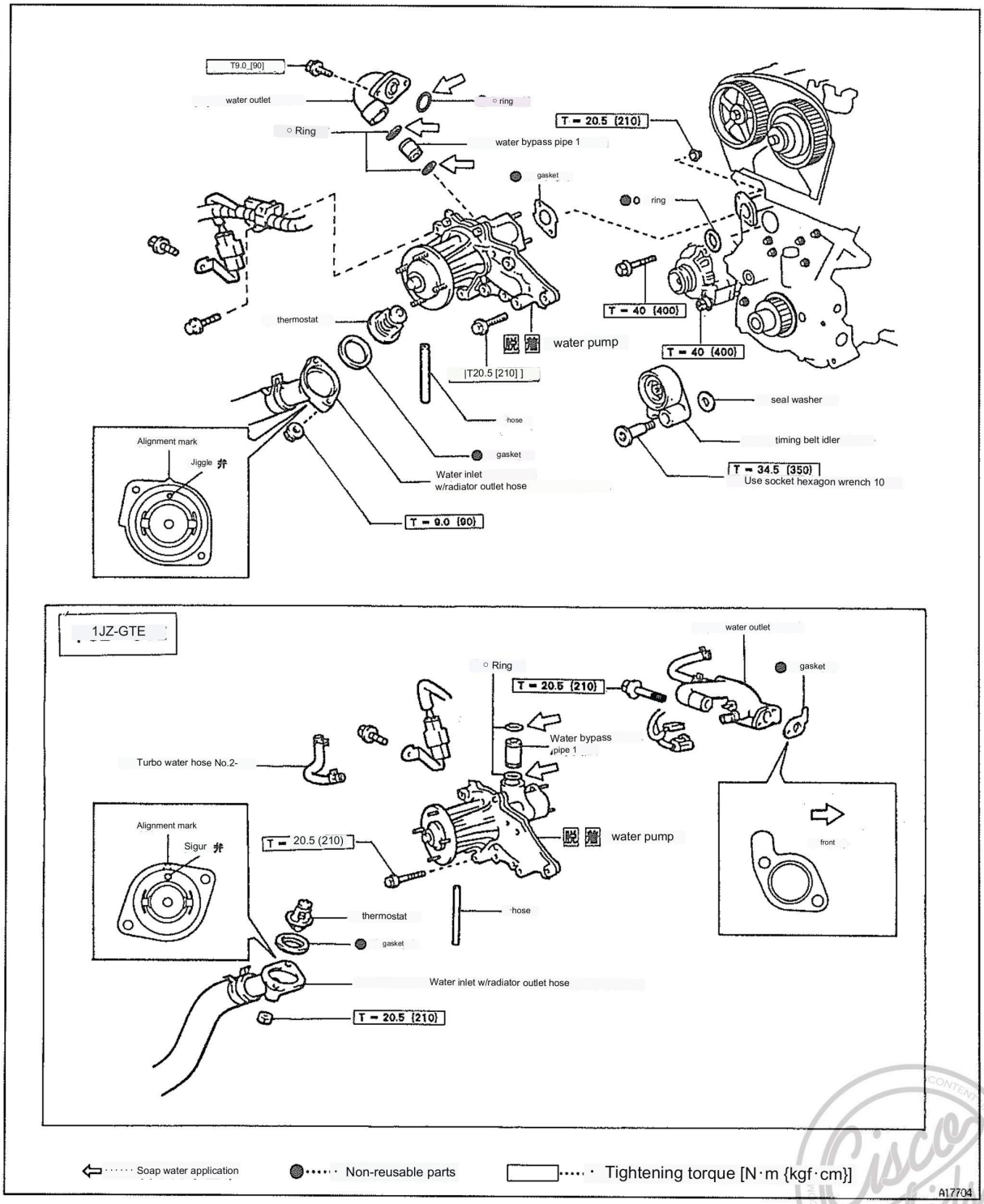
T0048781

water pump

Desorption configuration diagram

2



recollection
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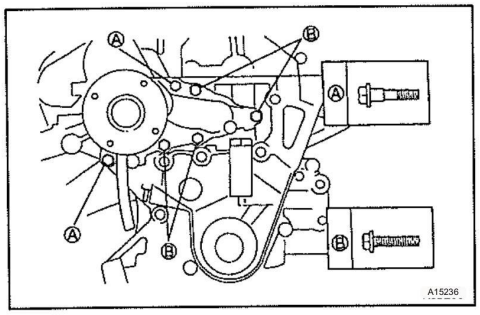
Precautions for desorption work

1 Remove and install

the timing belt (Refer to "Engine" - "Timing belt")

2 Remove the water pump

· Loosen the alternator mounting nut, remove the bolt, move the alternator to the left, and remove the water pump.



3 Water pump installation

· Attach the water pump to the cylinder block and the water-by.

Attach to pass pipe with 6 bolts and 2 nuts.

Note · Do not drop the O-ring and gasket. · Install the two types of bolts in the positions shown in the figure. · Tighten the A bolt first.

times recollection
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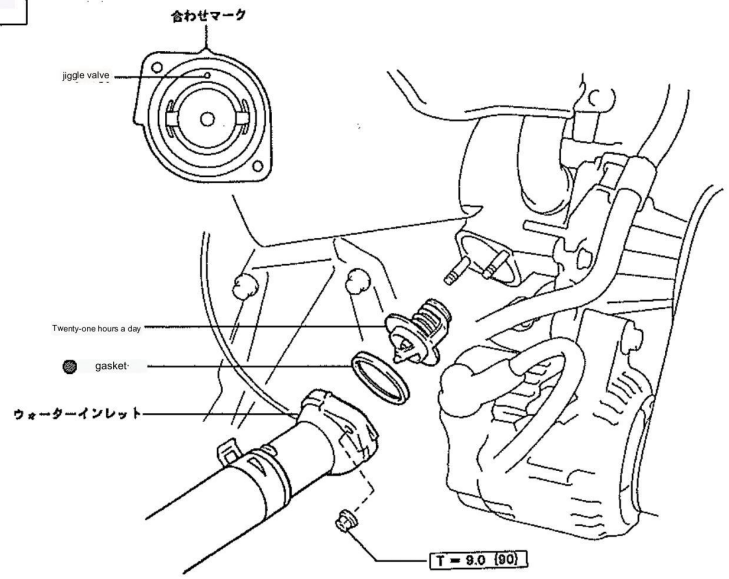
T0348762

thermostat

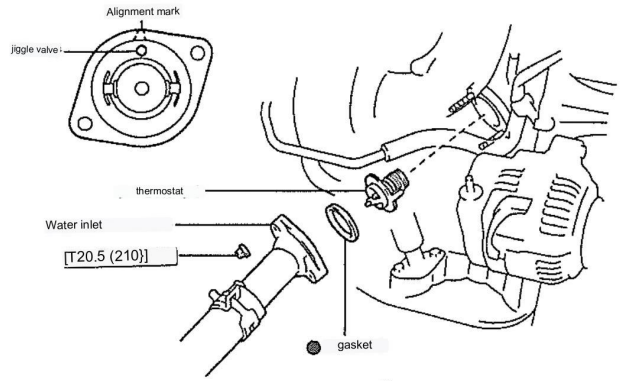
Dress configuration diagram

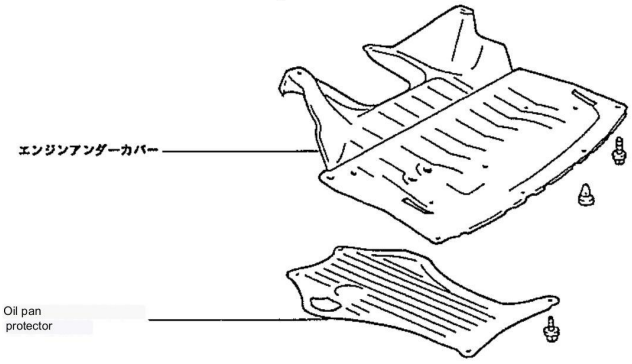
2

1JZ-GE.2JZ-GE



1JZ-GTE





A04816 A17536

●••••• ·Non-reusable parts

.....Preferences [N m {kgf-cm}]

A17707

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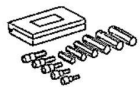
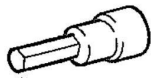
ignition

注意 ·· Do not disconnect the battery terminal while the engine is running.· Do not perform actions that cause harmful pulsus.

Preparation product

2

tool

	09040-00010	hexagon wrench set	
	(09043-20050)	socket hexagon wrench 5	Cylinder head cover No.3 and timing Belt cover No.3 for removal

針 器

	09082-00012	toyota electrical tester	For ignition coil inspection

recollection times
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T0045785

Unit inspection

Spark plug

(Refer to "Engine Tuning" - "Basic Inspection")

Resistive code

2

1 Resistance check

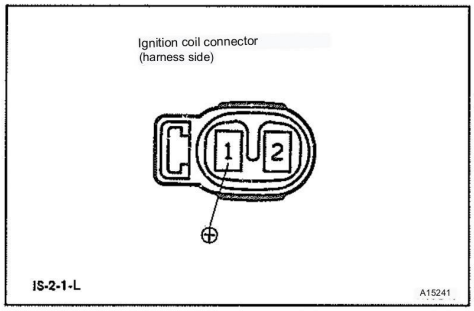
(1) Using a Toyota Electrical Tester, measure the resistance of the resistive cord.

limit 25kΩ/line or less

ignition coil

Note Cold* and warm* in the text refer to the ignition coil itself. represents temperature.

Also, the temperature setting range is cold (-10 to 50°C) and warm (50 to 100°C).



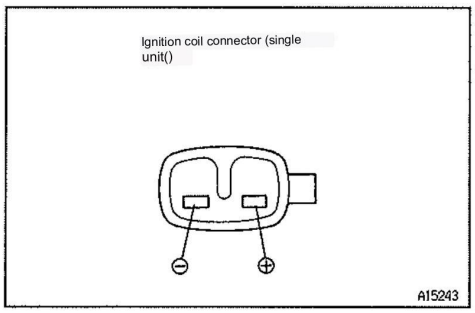
1 Input voltage check

(1) Disconnect the ignition coil connector.

(2) Turn on the ignition switch. (3) Measure the voltage between the + side terminal of the harness side connector and the body ground.

set. Reference value 10~14V

(4) Turn off the ignition switch.

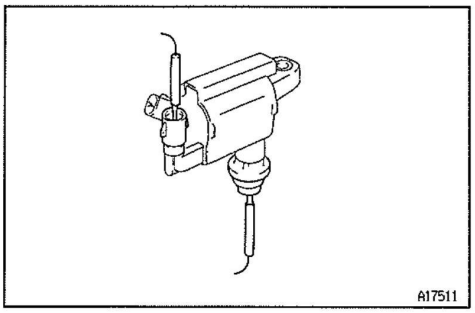


2 Primary coil resistance check

(1) Measure the resistance between the + terminals of the ignition coil.

Standard value 0.33~0.52Ω (when cold*)

0.2~0.61 (when warm*)



3 Secondary coil resistance check

(1) Measure the resistance between the high voltage terminals of the ignition coil.

Reference value 8.5~14.7kΩ (when cold*)

10.8~17.2kΩ (when warm)

4 Insulation resistance check

(1) Measure the resistance between the ignition coil terminal and body ground.

do.

Standard value 10MΩ

or more (2) Connect the ignition coil connector.

CONT
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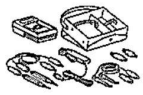
T0048787

starting

supplies

instrument

	09082-00012	toyota electrical tester	For starter relay inspection

T0048788

2

starter

Precautions for desorption work

Caution Be sure to disconnect the battery terminal when removing or installing the starter.

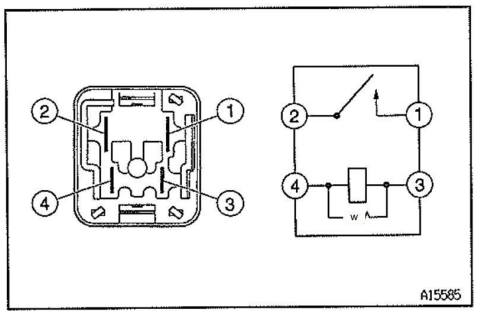
conduct.

1 Detach the starter ·

T=9.81N·m {100kgf-cm) (starter x terminal)

T=39N·m {400kgf-cm) (starter x transmission)

T0048789



Unit inspection

Starter relay check

1 Resistance and continuity check

(1) Using a Toyota Electrical Tester, measure the resistance between each terminal

Measure. Reference value to 3-4 60~1000 (20°C).

10 MΩ or more between 12 terminals

(2) When battery voltage is applied between 34 terminals,

Check for continuity.

Standard continuity

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T0048790

charging

supplies

2

計 器

	09082-00012	toyota electrical tester	For alternator inspection

T0048791

Functional check

1 Battery specific gravity check

standard value 1.25~1.29 (liquid temperature 20℃)

2 Battery terminal inspection

3 V-ribbed belt inspection

(Refer to "Engine Tuning" - "Basic Inspection")

4 Fuse check

5 Wiring condition check

6 Abnormal noise check

7 Functional check

Inspection items	fixed conditions	Reference value
[No-load test (Adjustment voltage check)	Maintained at engine speed 2000r/min (Note Performed at an output current of 10A or less.	13.2~14.8V
"Load test (output current check)	Apply an electric load from the above state ① Headlamp ON (high beam) ③ Defogger switch ON (② Heater blower switch ON (HI)	30A or more

JB3483

T0048792

alternator

Precautions for desorption work

1 Removal and installation of V-ribbed belt

("Engine adjustment" - "V-ribbed belt replacement")

2 Alternator installation/

removal T=40N·m {400kgf·cm) (Bolt)

T=40N·m {400kgf·cm】 (Nut)

[recollection times

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TOC40793

Turbocharger & Intercooler (1JZ-GTE)

注意

· Wipe the removed parts and the opening on the engine side with a clean cloth or gum, as metal pieces entering the intake and exhaust passages will adversely affect the engine and turbocharger. Cover with tape, etc.

· Before installing the parts, make sure that there are no pieces of metal inside the parts.

and

· Carefully handle the turbocharger, do not drop it, Do not shock.

· When there is an abnormality in the impeller or turbine of the turbocharger, in either case, there is an abnormality in the intake/exhaust path and inside the combustion chamber. Make sure there are no

2

supplies

計 器

	TCP-2TB	turbocharger pressure gauge Handled by Banzai Co., Ltd.	For inspection of each part
	TB-501 HVP-1	mighty back Handled by Banzai Co., Ltd. Handled by Iyasaka Co., Ltd.	For inspection of each part

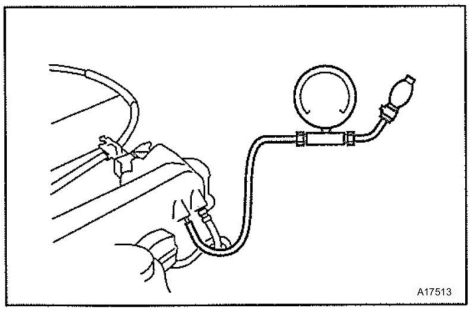
Oil and other

Toyota genuine engine oil 32103	Replenishment
Toyota genuine long life coolant 32001	補充用

T0040700

Functional check

Turbocharger system inspection



1 Turbocharger boost pressure check

(1) Connect the turbo pressure gauge to the position shown in the figure.

(2) Engine speed 6000r/min or more, 1st gear (L range) and acceleration

Measure the boost pressure when running with the cell fully open.

standard value 59.3~67.3kPa {0.60~0.69kgf/cm²}

2 Actuator operation check

(Refer to "Individual Inspection" - "Actuator")

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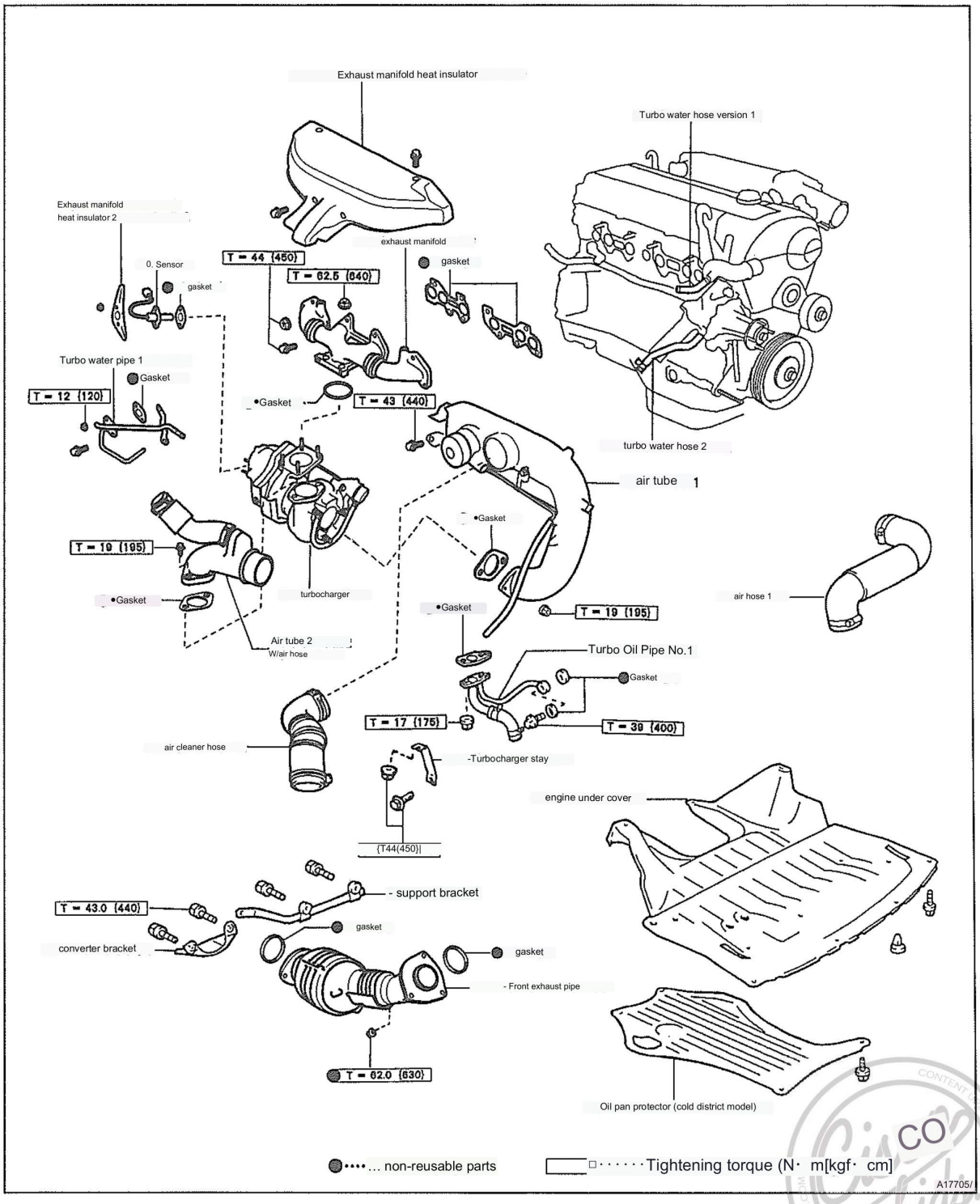
T0048795

turbocharger

Desorption configuration diagram

2



visit
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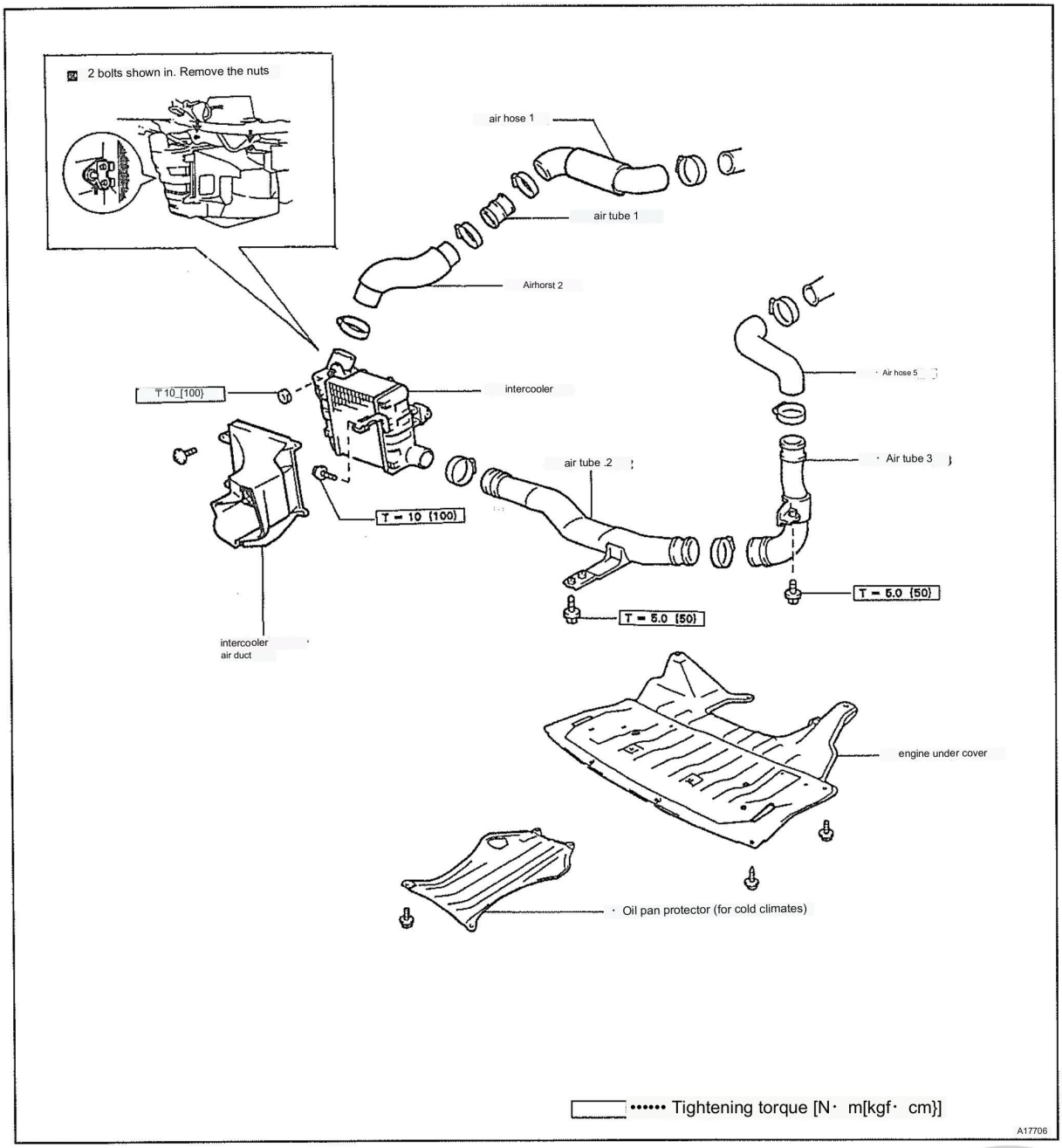
T0048795

intercooler

Desorption configuration diagram



Precautions for desorption work

1 Remove and install the front bumper (Refer to "Body" and "Front Bumper")

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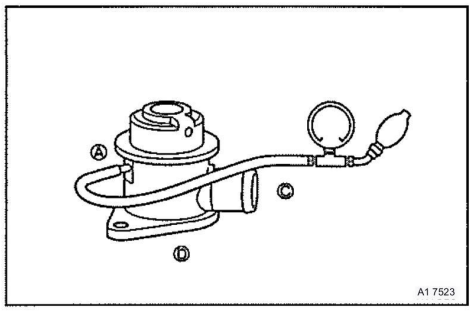
T0048797

Unit inspection

Airflow meter (Refer to "Engine control system" - "Individual inspection")

2

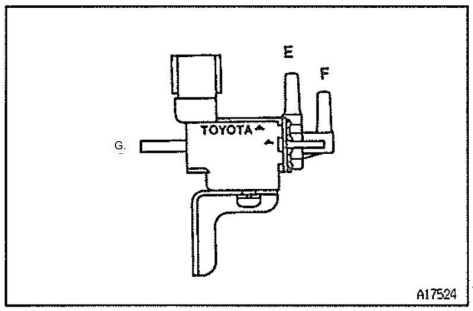


ABV

1 Ventilation check

(1) Connect a turbo pressure gauge to the A port, and confirm that there is ventilation between CD when a pressure of 13.3kPa {0.14 kgf/caf} is applied.

(2) When the state of (1) is opened to the atmosphere, confirm that there is no ventilation between ①.

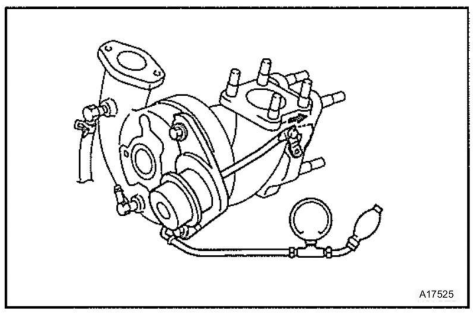


VSV

1 Ventilation check

(1) Apply the battery voltage across the VSV terminals and check for airflow between each port when the coil is energized and when the coil is not energized.

Standard	When energized	With EF
		Between EG No ventilation
	When not energized	Between E F No ventilation
		Between EG With ventilation



actuator

1 operation check

(1) Using a turbo pressure gauge, confirm that the rod starts moving when a pressure of about 89.3kPa (0.91kgf/cmf} is applied to the actuator.

Note Apply pressure of 131kPa {1.34kgf/cm} or more to the actuator. can't

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Steamed noodles times

3 2L-TE engine

engine adjustment 3-3
Preparation items 3-3
Basic inspection 3-4
V-belt tension/deflection adjustment 3-5
Tips 1 3-5
Compression inspection 3-5
Tip 2 3-5
Valve clearance inspection, adjustment, ... 3-6
|Point 3 | 3-6
ECD system 3-7
Preparation items 3-7
Parts layout diagram/ 3-8
Glow plug... 3-9
Disassembly configuration diagram 3-9
Points to note during attachment/detachment work 3-9
engine control computer 3-9
troubleshooting 3-10
How to proceed with troubleshooting 3-10
Basic inspection 3-12
Diagnosis check... 3-13
Troubleshooting by diagnostic code 3-13
Chart by malfunction phenomenon... 3-16
| Turbocharger system 3-18
Turbocharger actuator inspection 3-18
Turbocharger boost pressure check... 3-18
| Solenoid spill valve system | 3-19
"Glow System" 3-20
Glow indicator check... 3-21
Glow control inspection 3-21
Intake throttle system 3-22
Functional inspection (intake throttle system) 3-23
Exhaust gas recirculation device (EGR system) 3-24
Functional inspection (EGR system) 3-25
"Injection nozzle 3-26
Power balance check 3-26
Individual inspection | 3-27
Turbo pressure sensor inspection/ 3-27
Inspection of solenoid valve 3-27
Subil valve relay, ECD main relay inspection.....3-27
Glow plug inspection 3-28
Glow plug relay inspection... 3-28
VSV No. 1 and No. 2 inspection... 3-28
Venturi inspection 3-28
EVRV inspection 3-29
EGR valve inspection 3-29
Intake temperature sensor/water temperature sensor
· Fuel temperature sensor inspection.....3-29
speed sensor
(Inside the combination meter) Inspection...3-29
diesel engine revolution
Sensor inspection.....3-30
Throttle position sensor inspection...3-30 .....
Compensation resistance A (gray) and B (brown) inspection 3-30
Timer control valve inspection...3-31 .....
Crank position sensor inspection...3-31 .....
Engine control computer inspection 3-31
Engine ASSY 3-39
Preparation items 3-39
vacuum piping 3-40
Piping diagram 3-40
Engine ASSY installation and removal 3-41
Tightening torque list 3-41
Points to note during attachment/detachment ..... work 3-41
Partial engine 3-42
Exploded configuration diagram 3-42
Points to note when disassembling and reassembling ..... work· 3-43
Engine body 3-44
Preparation items 3-44
timing belt 3-46
Detach ment configu ration diagram 3-46
Work Precautions 3-47
Points to note during removal work· 3-47
Inspection before timing belt installation 3-47
Points to note during installation work...3-48 .....
Camshaft oil seal 3-49
Detachment configuration ..... diagram 3-49
Points to note during attachment/detachment ..... work 3-50
Cylinder head gasket· 3-51
Detach ment configu ration diagram 3-51
Cylinder head gasket removal 3-52
Points to note during installation work... 3-53
Crankshaft front oil seal 3-54
Points to note during attachment/detachment work 3-54
Engine rear oil seal 3-55 Points to ..... note
when installing and removing 3-55
Fuel 3-56
Preparation items 3-56
injection nozzle holder
AND Nozzle set...3-57
Detach ment configu ration diagram 3-57

3

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injection pump 3-58
Detachment configuration diagram 3-58
Points to note during attachment/detachment work 3-58
fuel filter element 3-59
Points to note during attachment/detachment work 3-59
fuel tank 3-59
Individual inspection 3-60
Fuel level warning switch 3-60
Fuel heater (cold region specification vehicle) 3-60
Fuel heater relay (cold region specification vehicles) 3-60
Lubrication 3-61
Preparation items 3-61
Functional check 3-62
Oil pressure check... 3-62
oil filter &
Union (for oil filter) 3-63
Points to note during attachment/detachment work 3-63
timing gear case 3-64
Detachment configuration diagram 3-64
Points to note during attachment/detachment work 3-65
oil cooler 3-66
Detachment configuration diagram 3-66
Points to note during attachment/detachment work 3-67
cooling 3-68
Preparation items 3-68
Cooling water exchange 3-68
Functional check 3-69
Cooling system leak check 3-69
water pump 3-69
Points to note during attachment/detachment work 3-69
thermostat 3-69
Points to note during installation work 3-69
Individual inspection 3-69
thermostat 3-69
Radiator cap... 3-69
Starting· 3-70
Prepared items... 3-70
starter 3-70
Points to note during attachment/detachment work 3-70
Individual inspection..... 3-70
starter relay 3-70
charging 3-71
Prepared items..... 3-71
Functional check 3-71
alternator 3-71
Points to note during attachment/detachment work 3-71
turbocharger 3-72
Prepared items..... 3-72
Functional check... 3-72
Turbocharger boost pressure... 3-72
Turbocharger actuator 3-72
turbo warning 3-72
turbocharger 3-73
Detachment and disassembly configuration diagram 3-73
turbocharger actuator 3-74
Turbocharger actuator replacement 3-74
Individual inspection... 3-75
Turbo pressure sensor 3-75
Engine control computer...3-75 .....

3

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TDC46951

engine adjustment

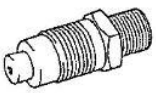
Preparation items

SST

	09248-64011	Valve clearance adjustment tool	For valve clearance adjustment

3

instrument

	95506-00090	belt tension gauge (Nippondenso product number) Treated as Nippondenso Co., Ltd.	For V-belt tension measurement
	TDG-1E DCG-UTTN-1	Diesel compression gauge set Banzai Co., Ltd. Iyasaka Co., Ltd.	For compression measurement
	TDG-12 NO.34	attachment Treated as Banzai Co., Ltd. Treated as Iyasaka Co., Ltd.	For compression measurement
Straightedge, push-pull gauge	22102		For V-belt deflection measurement
smoke tester	23301		For checking diesel smoke concentration
Micrometer (0~25mm)	20301		For valve clearance adjustment

Oils and fats/others

mirror	56101	For checking injection timing
Seal packing black	50902	For installing cylinder head cover
Vinyl tape	53702	"For glow plug wiring protection"

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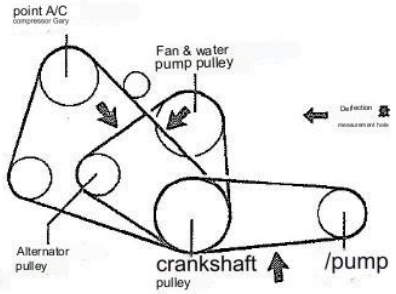
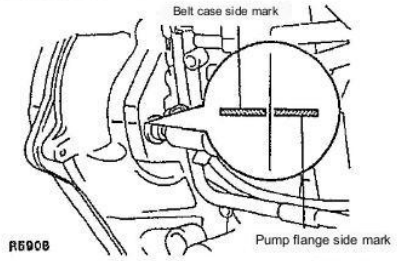
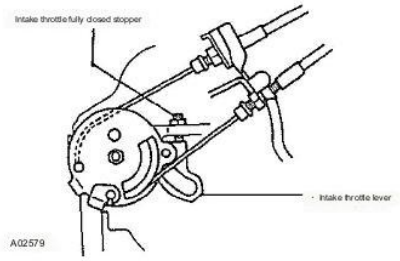
T004858Z

Basic inspection

Inspection items	Reference value			Main points
battery specific gravity	1.25~1.29 (20℃)			
V belt tension	Reference value kinds	When new installed (N {kgf})	During inspection (N {kgf})	· Deflection measurement  R1165
	for alternator	440~540 {45~55} (per piece)	195~345 {20~35} (per bottle)	
	For P/S pump	440~540 {45~55}	195~345 (20~35)	
	For A/C compressor	440~540 (45~55)	195~345 {20~35}	
Deflection amount [Pushing force 98N {10kgf}]	Standard value Type	When new installed [mm]	During inspection [mm]	· When inspecting a belt that has been used for more than 5 minutes, use the reference value at the time of inspection. · When replacing the V-belt for the alternator with a new one, use a set of two.
	for alternator	7~10 (per bottle)	10~14 (per bottle)	
	For P/S pump	8~10	10~15	
	For A/C compressor	13~17	17~21	Adjustment: Instructions 1
Injection pump installation status	· Use a mirror to check that the marks match  R6908			· To adjust, move the pump body and match the marks. T=20.5Nm (210kgf· cm) (Nut) T-18Nm (185kgf· cm) (Bolt)
compression	Standard 3.04MPa (31kgf/cm²) Limit 1.96MPa (20kgf/cm²) Cylinder difference limit 490kPa (5kgf/cm² or less			Inspection: Instructions 2
valve clearance	IN 0.20~0.30mm (when cold) EX 0.40~0.50mm (when cold)			Inspection: Instructions 3
Idle speed	650~750r/min			 A02579 Troubleshooting for values other than standard values
Maximum no-load rotation speed	4650~4950r/min			
diesel smoke concentration	40% or less			Troubleshooting for values other than standard values
injection pressure	14.22~15.20MPa {145~155kgf/cm²}			

JE0026

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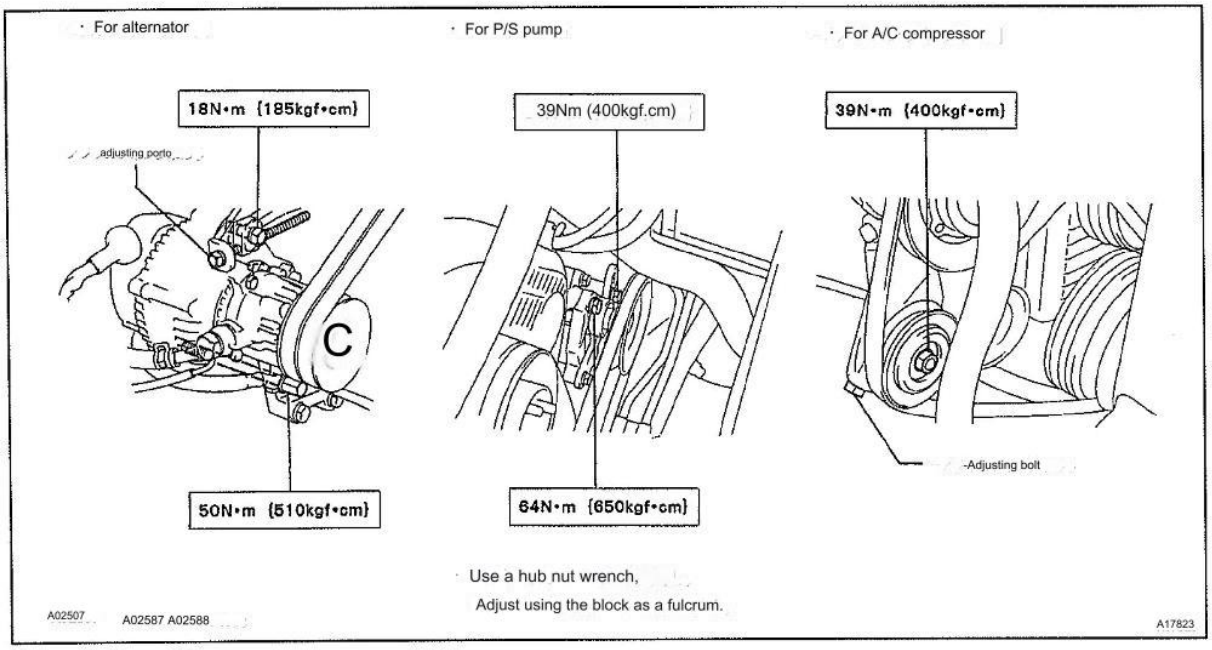
T0049285

V-belt tension/deflection adjustment

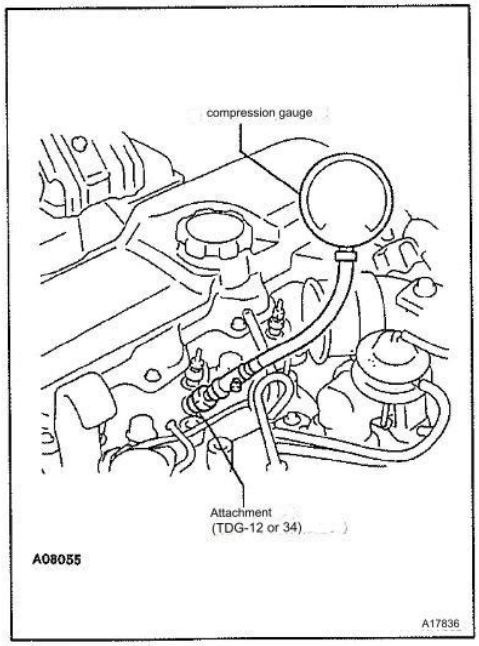
Tips 1



T0049288

Compression inspection

Tip 2



- Compression measurement is performed at the injection nozzle hole.
- Wrap vinyl tape around the terminal part of the glow plug wiring to prevent short-circuiting of the glow plug wiring.
- Turn the starter to remove foreign matter from the cylinder before measuring compression.
- Use a fully charged battery to keep the engine speed above 250r/min.

1 Injection nozzle removal
(See "Fuel" and "Injection Nozzle Holder and Nozzle Set")

2 Removing the solenoid valve connector

3 Compression measurement
Standard value 3.04MPa (31kgf/cm²) (250r/min)
Limit 1.96MPa {20kgf/cml) (250r/min)
Cylinder difference limit 490kPa {5kgf/cm²} or less

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T0048267

Valve clearance inspection and adjustment

Measurement site	No 1		No 2		No 3		No 4	
	IN	EX	IN	EX	IN	EX	IN	EX
No1 Compression top dead center	○	○	○			○		
No4 Compression top dead center				○	○		○	○

JB2966

Tip 3

1 Valve clearance check

Standard value IN 0.20~0.30

(cold) EX 0.40~0.50 (cold)

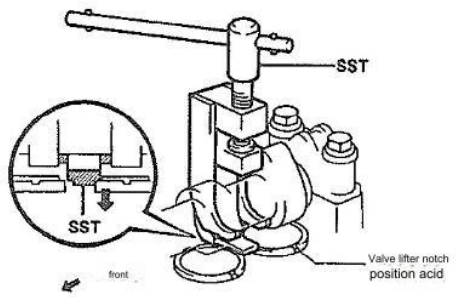
2 Valve clearance adjustment

(1) Replace the shim according to the procedure below.

SST 09248-64011

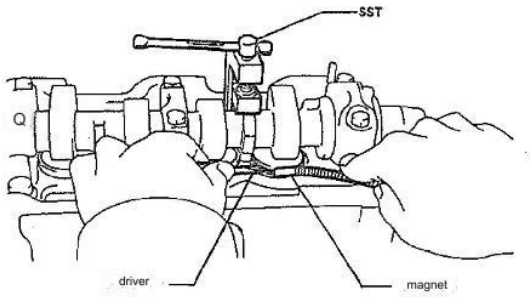
<Reference> There are 17 types of shims in the range of 2.50 to 3.30mm, with increments of 0.05mm.

1 Press the lifter down with SST

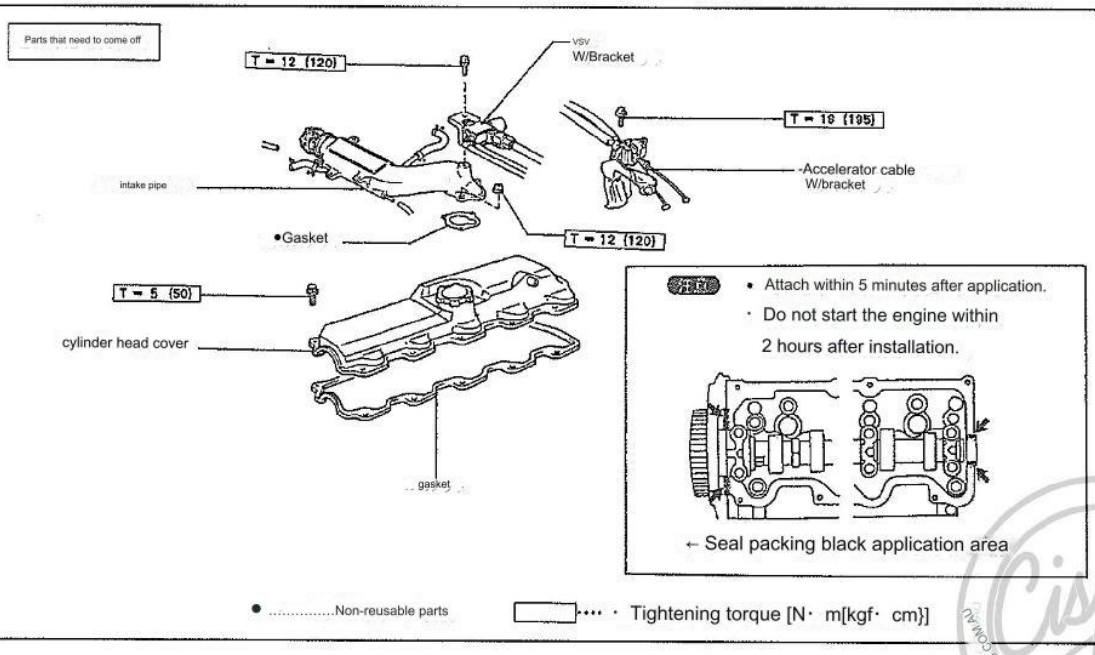


R2545 R1785

2 Replace the shim



A17874



A18002

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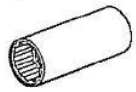
T0046853

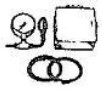
ECD system

Preparation items

tool

	09017-38120	Deep socket wrench (12mm)	Glow plug removal and removal
	09017-12193	Deep socket wrench (19mm)	"Water temperature sensor removal/removal

instrument

	09082-00012	toyota electrical tester	For inspection of each part
	(09083-00060)	mini test lead	Engine control computer inspection
	09843-18020	Diagnosis check wire	Diagnosis connector for short circuit
	09991-50100	Toyota Diagnosis Reader Set	For reading diagnosis codes For checking computer data
	09991-50320	Program IC card engine system 3	For reading diagnosis codes For checking computer data
r	TB-501 HVP-1	mighty back Treated as Banzai Co., Ltd. Treated as Iyasaka Co., Ltd.	For inspection of each part
	TCP-2TB	turbocharger pressure gauge Treated as Banzai Co., Ltd.	For turbo pressure sensor inspection
temperature meter	21701		For checking water temperature
Stopwatch	20901		For checking operating time
oscilloscope	20501		Engine control computer inspection

Oils and fats/others

Dry battery (1.5V x 4)	52504	EVRV inspection
mirror	56101	[For checking injection timing]

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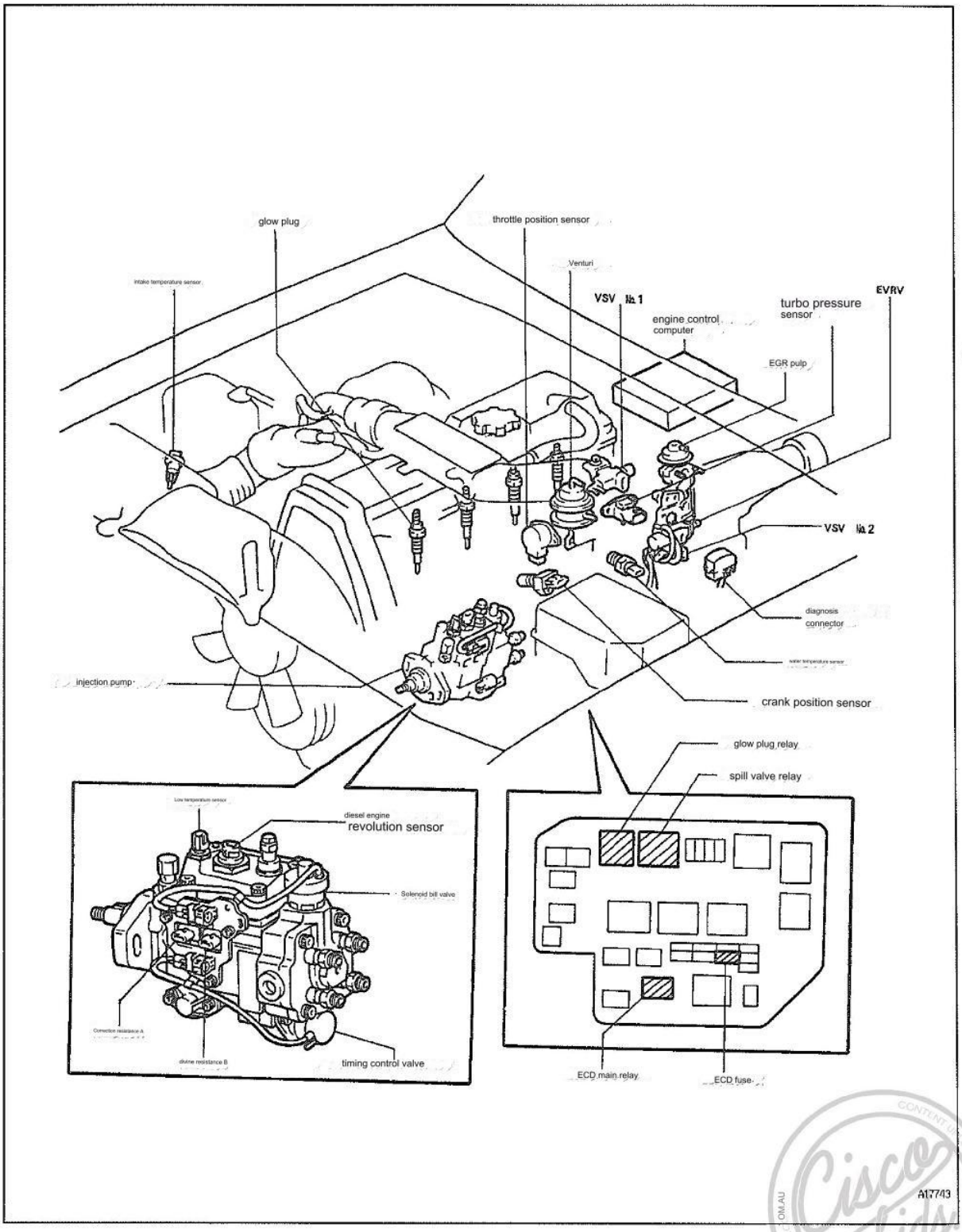
T0048054

Parts layout diagram



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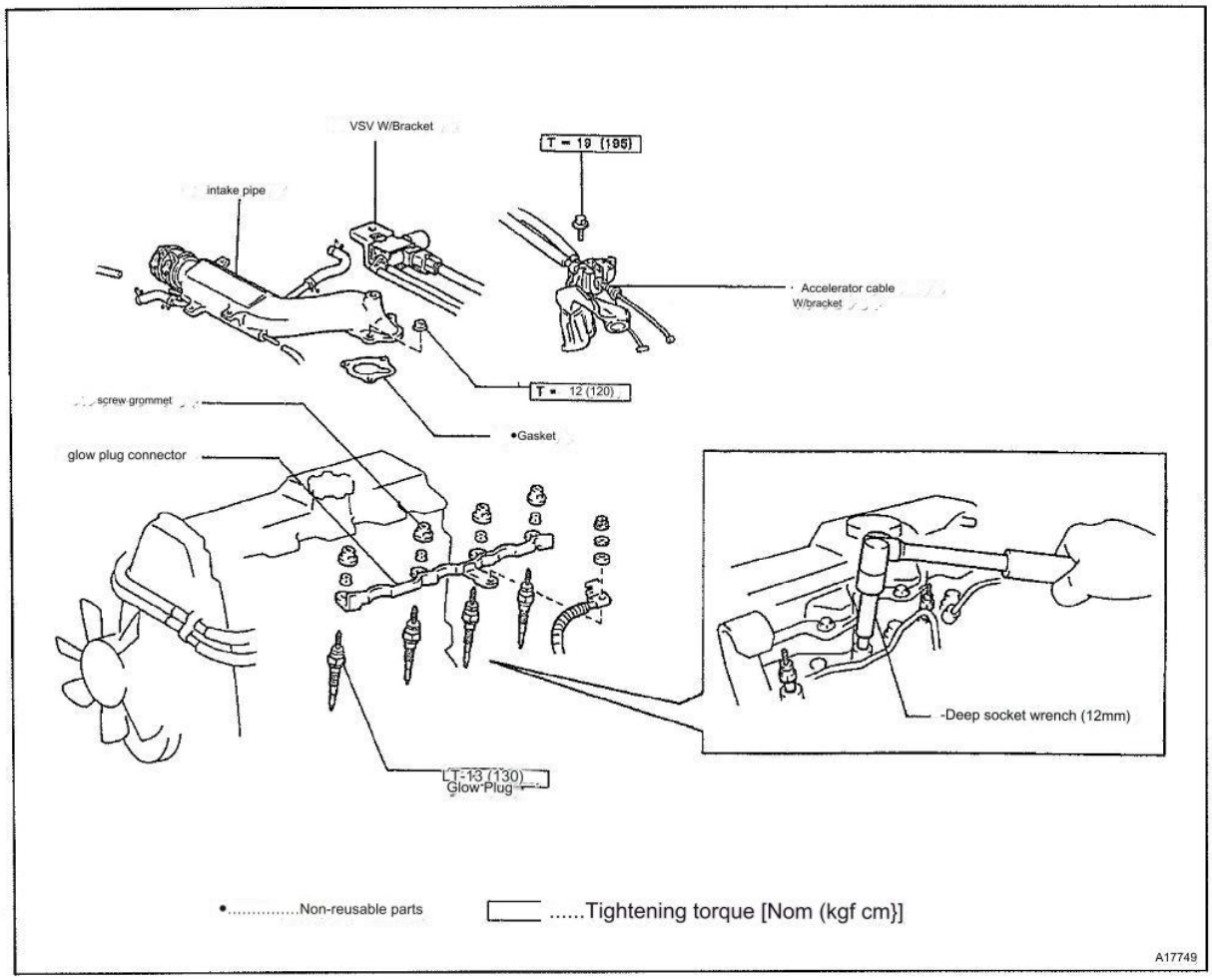
TOC49858

glow plug

Detachment configuration diagram



Points to note during attachment/detachment work

注意

- Inspection of the glow plug alone (resistance inspection) should be carried out with the engine installed (with the glow plug connector removed), and avoid attaching or detaching the glow plug as much as possible.
- Since ceramic is used for the heat generating part, do not use a glow plug (even if it is a new part) that has been dropped or subjected to an impact even once. (Cannot be reused even if there are no external scratches and the resistance value is normal.)

TOC49491

engine control computer

("1G-FE engine" "engine control system"

~See “Engine Control Computer”)

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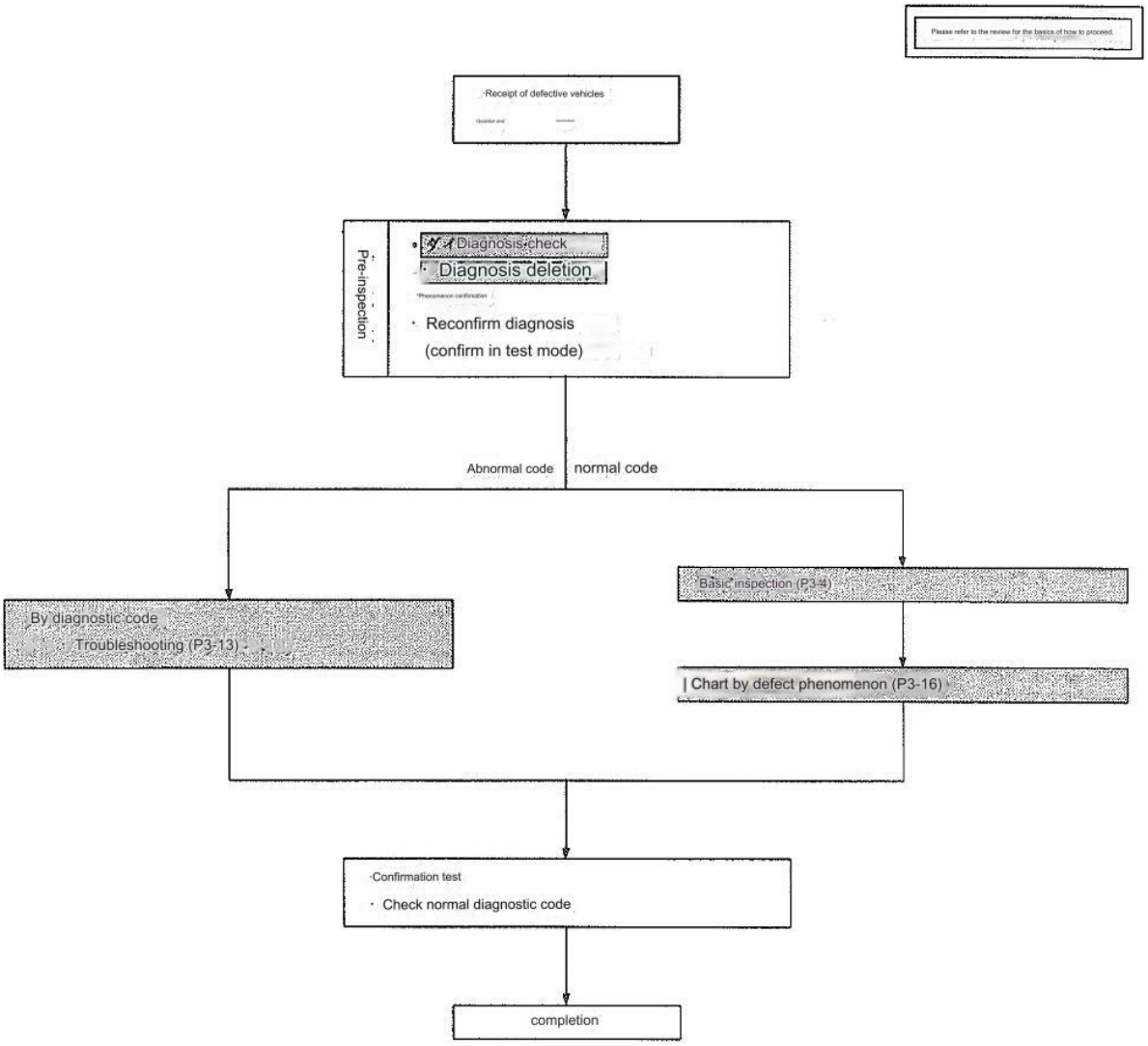
T0048957

troubleshooting

This troubleshooting mainly describes items caused by the ECD device. Therefore, matters related to the engine itself are not included.
I haven't.

How to proceed with troubleshooting

3



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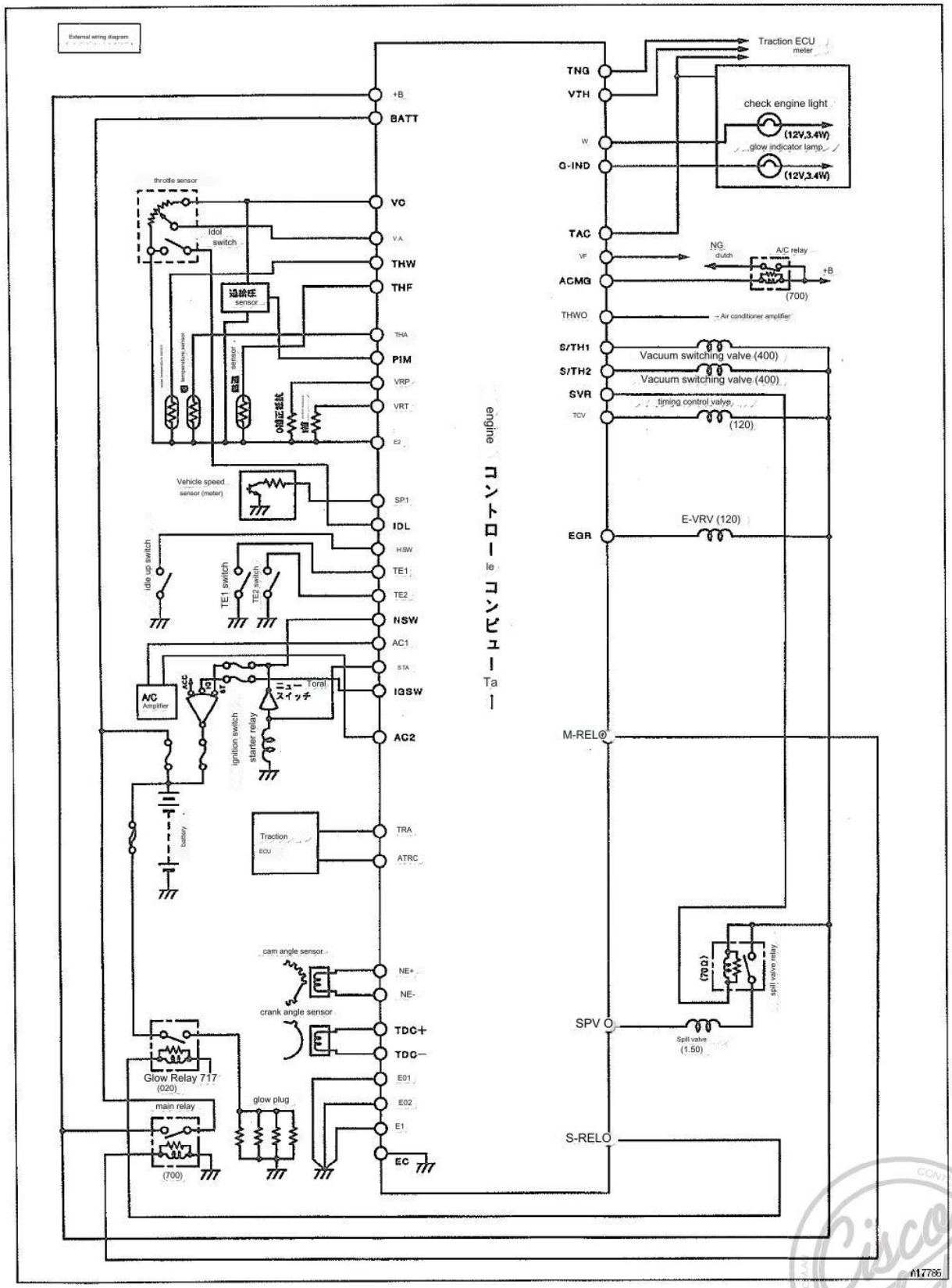

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Basic inspection

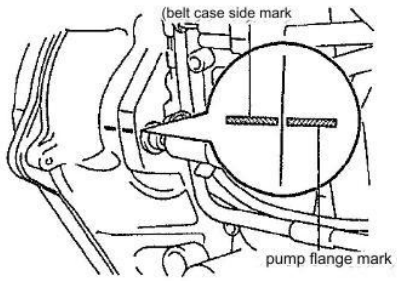
	Inspection items	Inspection guidelines	基准 quasi
fuel system	Leak from fuel line	Touch the piping route to check for leaks.	No leaks
	Sedimenter water volume	Check if the filter warning lamp is lit.	Not lit
	Injection timing	Tips 1	
power system	battery	Check specific gravity and voltage	1.25~1.29 (20℃) approx. 12V
	power path	Check fuses and fuse pull links for brokenness and installation condition.	Connected correctly
others	Accelerator wire check	Tips 2	
	Clogged air cleaner element	If there is any dirt or dust attached, clean or replace it.	No dirt, dust, etc. attached
	Intake system hose disconnected, crushed, intake part clogged	visual inspection	Be in normal condition

JB3250

Tips 1

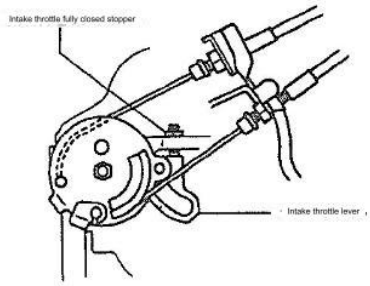
- Use a mirror to check that the marks match.
- If the marks do not match, move the pump body so that the marks match.

T-18N-m (185kgf· cm) (Bolt)
T-20.5N-m (210kgf· cm) (Nut)



Tip 2

- Check that the accelerator wire has returned and check that the intake throttle lever is touching the intake throttle fully closed stopper.



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Diagnosis check

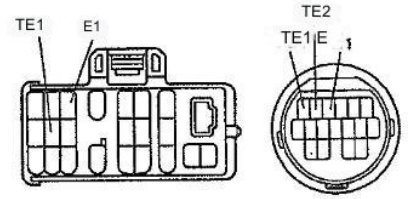
Diagnosis code reading

1 Preparation before inspection

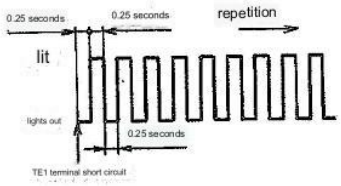
- Confirm that the check warning lamp is lit
- IG switch OFF
- Throttle valve fully closed (IDL contact ON)
- Shift position P or N range
- A/C OFF

2 Code reading

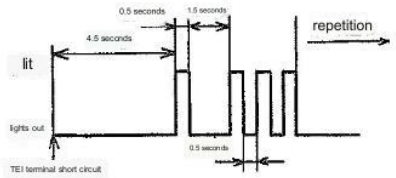
Diagnosis connector TDCL



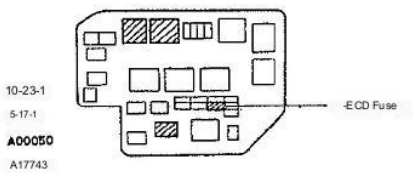
normal



For code "13"



engine room fuse box



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Check warning lamp: Normal mode

(1) TEE, short circuit between terminals

- Short circuit using the diagnosis check wire.

(2) IG switch ON

- Read the number of flashes of the check warning lamp.

Check warning lamp: test mode

(1) Normal mode reading and memory erasing

- Remove the ECD fuse (20A) for at least 10 seconds, then connect the fuse.

(2) Short circuit between Tez E_1 terminals

- Short circuit using the diagnosis check wire.

(3) IG switch ON

- Check engine warning light flashes rapidly (indicates test mode)

(4) Engine start

- Confirm that the check warning lamp is off.

(5) Driving test

- Driving at a speed of 5 km/h or more.
- Reproduce the situation where the problem occurred.

(6) Short circuit between T, E and terminals after running

- Short circuit and check using the diagnosis check wire

Read the number of flashes of the warning lamp.

diagnosis reader

- Read the code using a diagnosis reader.

Engine system code...2F0

Troubleshooting by diagnostic code

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code number	Diagnosis item (terminal symbol)	Diagnosis details ① Diagnosis conditions ② Abnormal condition ③ Abnormal period ④ Others) Normal mode	test mode	lamp lighting	memory	Main malfunction phenomena	Inspection area
12	Rotation signal system 1 (TDC+, TDC-)	① Engine speed is 400r/min or more ② Crank angle signal (TDC signal) Not entered	① Engine rotation speed 400r/min or more ② Crank angle signal at 2 engine revolutions (TDC signal) other than 2	○	○	loud knocking Poor drivability/	· Crank position sensor (P3-31) · Wire harness and connector (TDC signal system) Engine control computer (P3-31)
13	Rotation signal system 2 (NE+, NE-)	① Engine speed 680r/min or more, Starter signal OFF ② NE signal is not input ③ 0.5 seconds or more ① During cranking ② NE signal is not input ③ 2 seconds or more	① Engine rotation speed 680r/min or more ② NE signals other than 14 at engine 1/2 rotation	○	○	Engine stalled, unable to restart ·	Diesel engine revolution sensor (P3-30) · Wiring harness and connector (NE signal system) · Engine control computer (P3-31)
14	Advance angle control system (TCV)	① While driving after warming up the engine ② The actual control value deviates from the target advance angle value. ③ 20 seconds or more	←	* ○	○	Loud knocking Poor drivability	· TCV pulse inspection (P3-31) OK: Check ① NG: Check ② ① · Fuel piping bend · Fuel (frozen, air-filled) · Clogged fuel filter · Injection pump internal malfunction ② · Timer control pulp (P3-31) · Wire harness and connector (TCV signal system) · Engine control computer (P3-31)
22	Water temperature sensor signal system (THW, E2)	circuit ② Short circuit of water temperature sensor circuit or Short ③ 1 second or more	① Short circuit or disconnection of water temperature sensor circuit ②Less than 1 second	○	○	Cold startability, Poor drivability	· Water temperature sensor (P3-29) · Wire harness and connector (water temperature sensor system) · Engine control computer (P3-31)
24	Intake temperature sensor signal system (THA, E2)	② Short circuit in the intake temperature sensor circuit or Disconnection ③ 1 second or more	② Short circuit or disconnection of intake air temperature sensor circuit ③ Less than 1 second	×	○	Poor drivability/intake temperature sensor (P3-29)	· Wire harness and connector (intake temperature sensor system) · Engine control computer (P3-31)
32	Correction resistance system (VRP, VRT, E2)	② Short circuit or disconnection of compensation resistance circuit ③ 1 second or more	② Short circuit or disconnection of correction circuit ③ Less than 1 second	×	○	Poor drivability and large black smoke emissions	Compensation resistance (P3-30) · Wire harness and connector · (Compensation resistance system) · Engine control computer (P3-31)

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コード No.	Diagnosis item (terminal symbol)	Diagnostic details [Diagnostic conditions ② Abnormal condition ③ Abnormal period ④ Others] Normal mode	test mode	lamp 点灯	Memory	Main malfunction phenomena	Inspection area
35	Turbo pressure sensor signal system (PIM, VC, E2)	① Engine speed is 2400 r/min or more, accelerator opening is 50% or more ② Intake pipe force signal is abnormally low value ③2 seconds or more	① Engine rotation speed 2000r/min or more, accelerator opening 50% or more ② Intake pipe force signal is abnormally low ③ Less than 1 second	○	○	Poor drivability/	Chart by abnormality phenomenon To turbocharger system (P3-18)
		② Intake pipe pressure signal is abnormally high ③ 2 seconds or more	② Intake pressure signal is abnormally high ③ Less than 1 second				
39	Fuel temperature sensor signal system (THF, E2)	② Short circuit or disconnection in the fuel temperature sensor circuit ③1 second or more	② Short circuit or disconnection of fuel temperature sensor circuit ③ Less than 1 second	○	○	Poor drivability/	Fuel temperature sensor (P3-29) · Wire harness and connector (fuel temperature sensor system) · Engine control computer (P3-31)
41	· Throttle position sensor signal system [VA, VC, E2)	② Throttle position sensor short circuit or disconnection ③ 1 second or more	② Throttle position sensor short circuit or disconnection ③ Less than 1 second	○	○	High idle speed Poor drivability Large shift shock	Throttle position sensor (P3-30) · Wire harness and connector (throttle position sensor system VC system) · Engine control computer (P3-31)
42	Speed sensor signal system [SP1]	① When running at an engine speed of 2800 r/min or more, shift position is other than P or N range ② Speed sensor signal is not input ③ 10 seconds or more	②Test mode width diagnosis The speed sensor signal will not be input until the TE and terminals of the connector are shorted.	×	○	——	Speed sensor (P6-35) · Wiring harness and connector (speed sensor system) · Engine control computer (P3-31)
43	Starter line (STA)	① Engine speed is 1200 r/min or more ② STA ON status is continuous ③ 10 seconds or more	②During test mode, the starter signal will not be input until the TE and terminals of the diagnosis connector are shorted.	x	○	——	· Wire harness and connector (starter signal system) · Ignition switch (P16-5) · Neutral start switch (P6-3) · Engine control computer (P3-31)
51	Switch signal (A/C, IDL, NSW)	——	① Short circuit between Tet →E1 terminal of diagnosis connector and starter signal OFF ②When any of the following is true: · Shift position other than P, N range · A/C switch ON • IDL contact OFF	——	——	——	· Neutral start switch system · A/C switch system · Throttle position sensor IDL system · Engine control computer (P3-31)

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Chart by defect phenomenon

· Inspect the relevant systems, sensors, and actuators based on the results of the basic inspection according to the table below.

Malfunction phenomenon / Inspection items			Reference	3-88	3—19	3-20	3-22	3—24	3—26	3—31	3-2 31	3-22 7	3-22 29	3—29
				Turbocharger system	Solenoid valve system	glow system	intake throttling system	Exhaust gas recirculation system (EGR)	injection nozzle	engine control computer	Input signal system*			
											AC signal (ACI AC2ACMG)	water temperature sensor	intake temperature sensor	fuel temperature sensor
Unable to start	don't crank													
	There is no first explosion				○	○	○			○				
	Does not explode completely				○	○	○			○				
Poor starting	cranking slow													
	cold time					○			○	○		○		
	After warming up				○				○	○				
	Always				○				○	○				
engine stall					○		○			○				
Bad idle	First idol doesn't work									○		○		
	high idle speed									○	○	○		
	low idle speed							○	○	○	○	○		
	Unstable idle rotation during warm-up					○	○	○	○	○				
	Unstable idle rotation after warming up						○	○	○	○				
	Hunting after cold start					○			○	○		○		
	Hunting after warming up								○	○				
Poor drivability	Insufficient output			○				○	○	○	○		○	○
	Abnormal knock occurs				○				○	○		○		
	Hunting while driving								○	○				
Large black smoke/white smoke	big black smoke	At startup												
		Always		○	○		○	○	○	○		○	○	○
	Large white smoke			○			○	○	○	○				
	Large white smoke during warm-up			○		○	○	○	○	○		○		

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How to read a flowchart

1000 ..... Item to work on
..... Items to check
..... Cause of failure

3-20				3-30	3-	
Input signal system *					Output signal system	
diesel engine revolution sensor	throttle position sensor	turbo pressure sensor	crank position sensor	Correction resistance A	Correction resistance B	timer control valve	Other related items
							Battery, starter, engine body, main relay
○							Compression, fuel and battery injection pumps
							Fuel, fuel filter, injection pump, engine oil
							battery, starter, engine oil
○						○	Fuel, fuel filter, injection pump, engine oil
○						○	injection pump
○						○	Compression, fuel, fuel filter, injection pump
○							fuel filter, injection pump
							fuel filter, injection pump
	○						injection pump
○	○		○			○	Injection timing, compression, valve clearance, fuel system engineering
○	○		○			○	contamination, injection pump
○			○			○	
○							injection pump
	○	○	○	○	○		compression, injection timing, fuel, fuel filter, injection pump
			○	○		○	Injection timing, fuel, injection pump
	○						injection pump
							main relay, battery
○	○	○		○	○		air cleaner, injection pump
			○	○		○	injection pump
			○	○		○	injection pump

* Possible items other than diagnosis detection conditions

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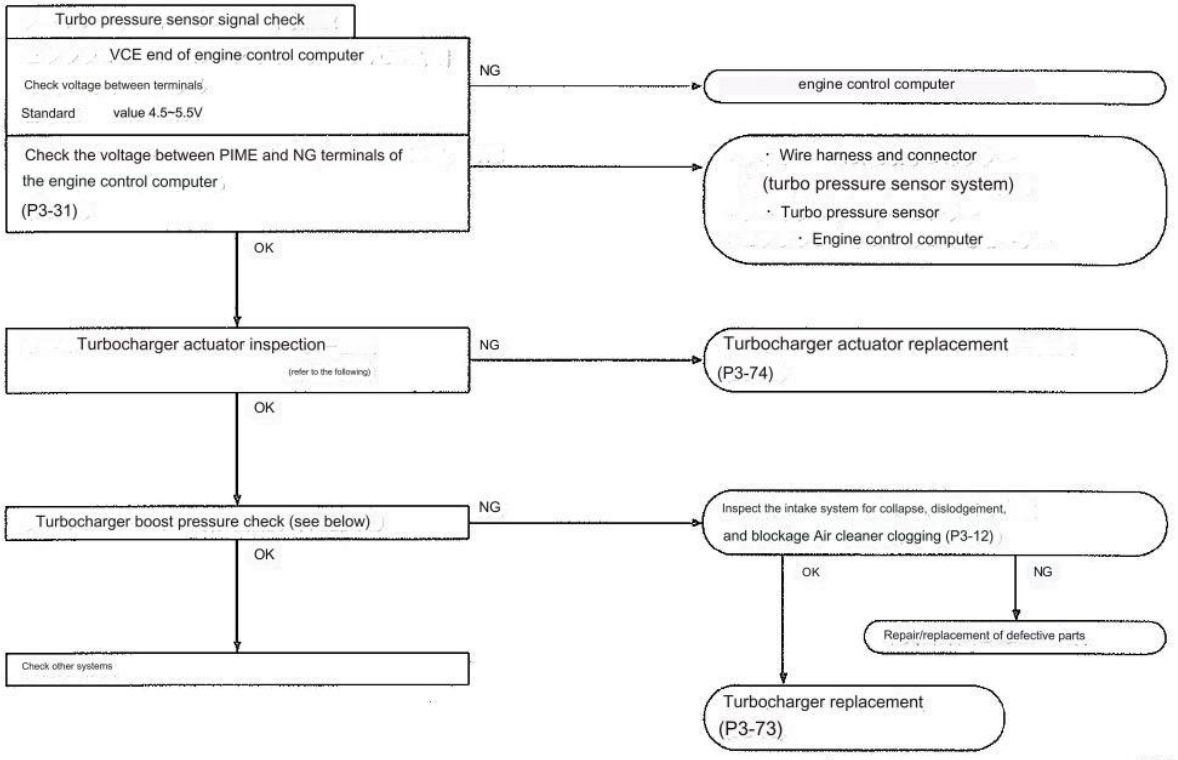
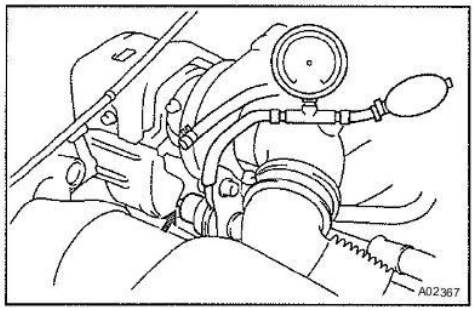
Turbocharger system



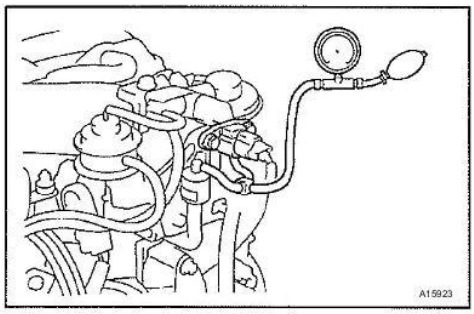


Turbocharger actuator inspection

1 Operation check

(1) Using a turbocharger pressure gauge, apply pressure of approximately 111kPa (1.13kgf/cm²) to the actuator and confirm that the rod works.

Do not apply pressure greater than 136kPa (1.39kgf/cm²) to the actuator.



Turbocharger boost pressure check

1 Boost pressure check

(1) Install the turbocharger pressure gauge as shown in the diagram.

CONT

(2) Engine speed 2400r/min or more, 1st gear (L range), throttle

Drive at full throttle and check the boost pressure.

Standard value 53.3~88.3kPa (0.54~0.90kgf/cnt)

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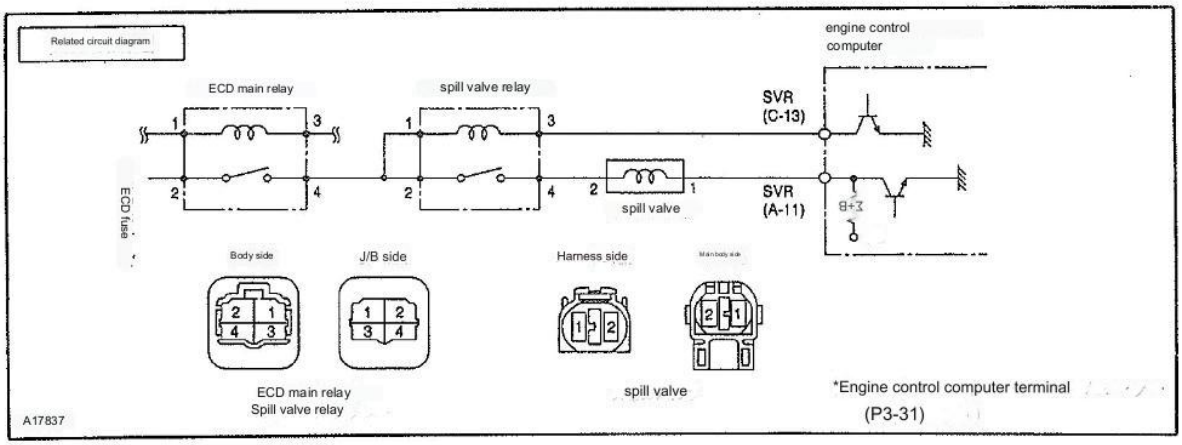
Solenoid spill valve system



SPV terminal voltage check

Check the voltage (waveform) between SPVE and OK terminals of the engine control computer (P3-31)

→ Check other systems

NG

Spill valve voltage check

IG Switch 1 and 2 terminals of spill valve when ON
Standard 9~14V

1 terminal NG → · Wire harness (spill valve 1 engine control computer SPV)
· Engine control computer

2 terminals NG

OK → Spill valve inspection

OK → Engine control computer

NG → · Spill valve

Spill valve relay removal

Spill valve relay voltage check

When IG switch is ON, Subir valve relay J/B side 1,2 terminals reference 9~14V

NG → · Wire harness (spill valve relay 1, 2ECD main relay)
· ECD main relay ·
ECD main relay control system

When IG switch is ON, J/B side 4 terminals of spill valve relay Standard 9~14V

NG → Wire harness (spill valve relay 4 spill valve 2)

OK

Spill valve relay inspection

NG → spill valve relay

OK

· Wire harness (spill valve relay 3 ↔ Engine control computer SVR)
· Engine control computer

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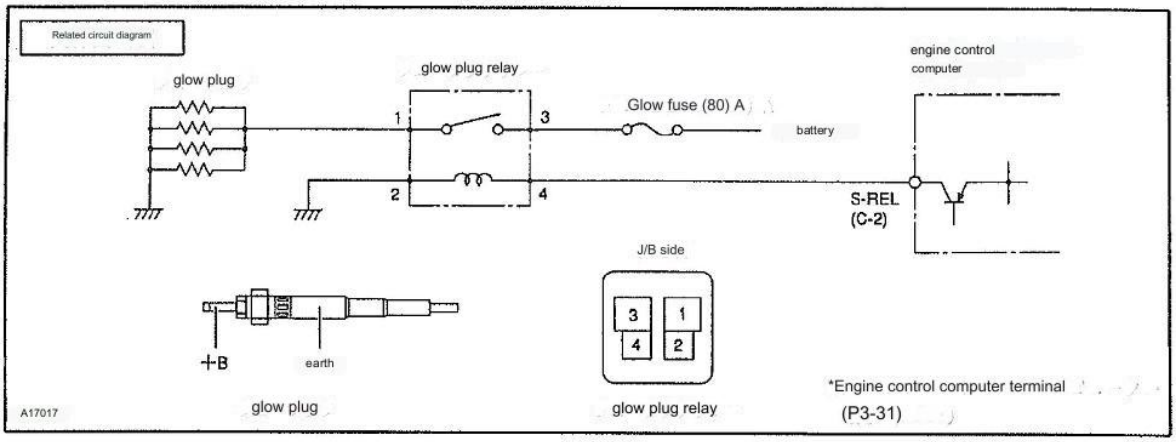
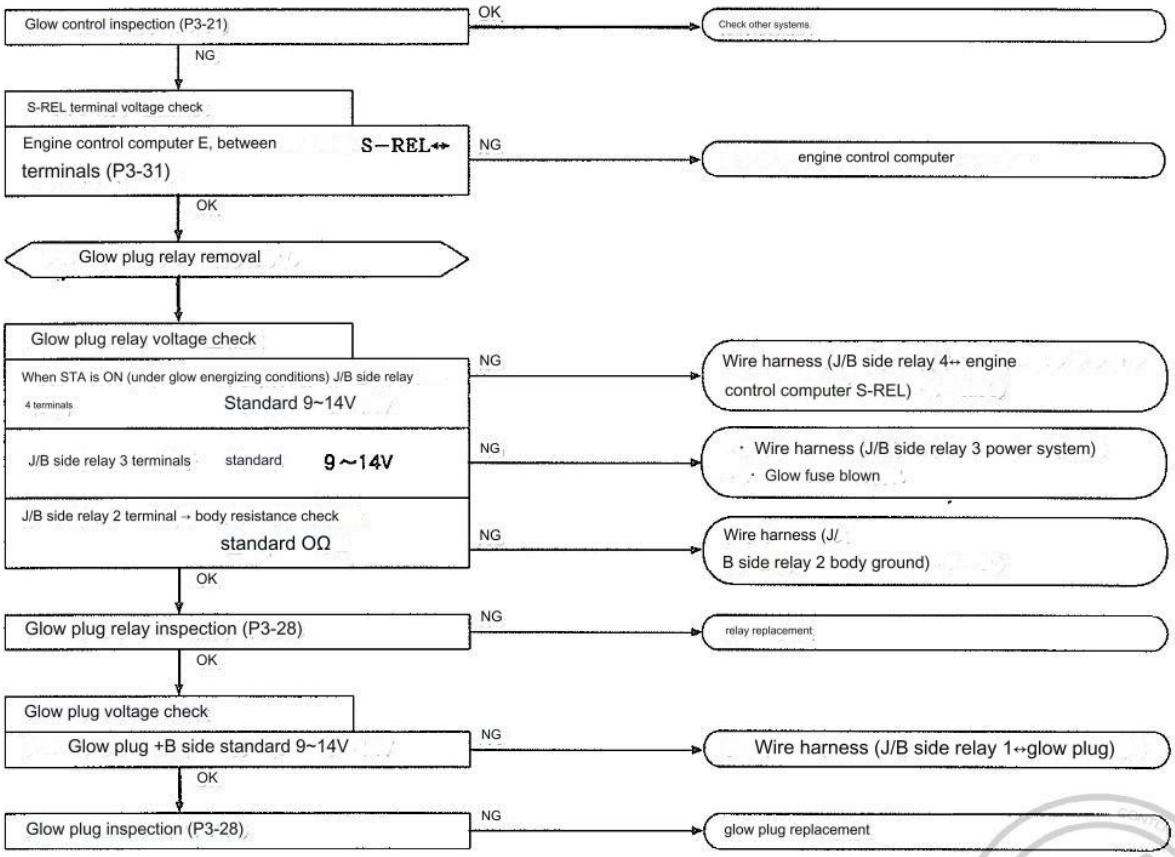
glow system

Check the quality of glow indicator control by inspecting the glow indicator.





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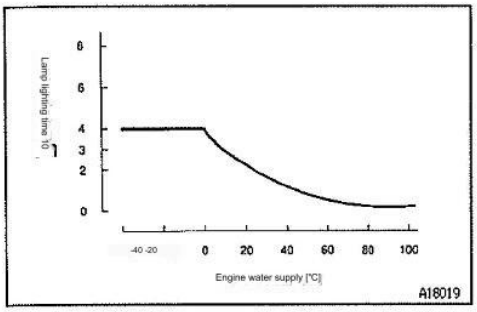


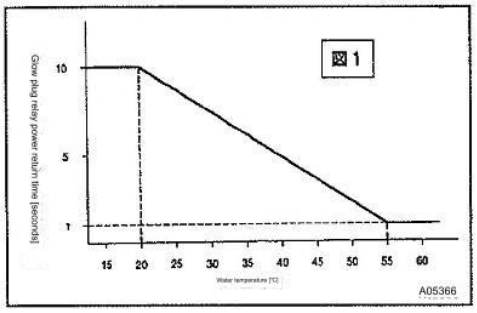
Glow indicator check

1 Lighting time check

注意 If you wish to repeat the check, turn off the IG switch for at least 15 seconds.

(1) Turn on the ignition switch and measure the lighting time of the glow indicator lamp.

Standard Lights up as shown in the diagram depending on the water temperature.



Glow control inspection

1 Energization time check

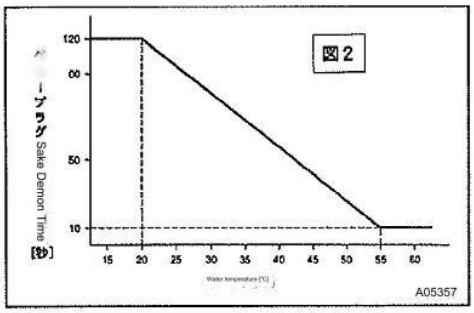
(1) Turn on the ignition switch and measure the time the glow plug (globe lug relay) is energized.

Standard: Depending on the water temperature, the energizing time will be as shown in Figure 1.

(2) When the ignition switch is set to the STA position (during cranking), check that voltage is applied to the glow plug.

(3) Measure the energization time to the glow plug (glow plug relay) immediately after cranking the engine to the extent that it does not start. Standard: Depending on the water temperature, the energizing time will be as shown in Figure 1.

(4) When cranking and starting the engine, measure the time the glow plug (glow plug relay) is energized. Standard: Depending on the water temperature, the energizing time will be as shown in Figure 2.



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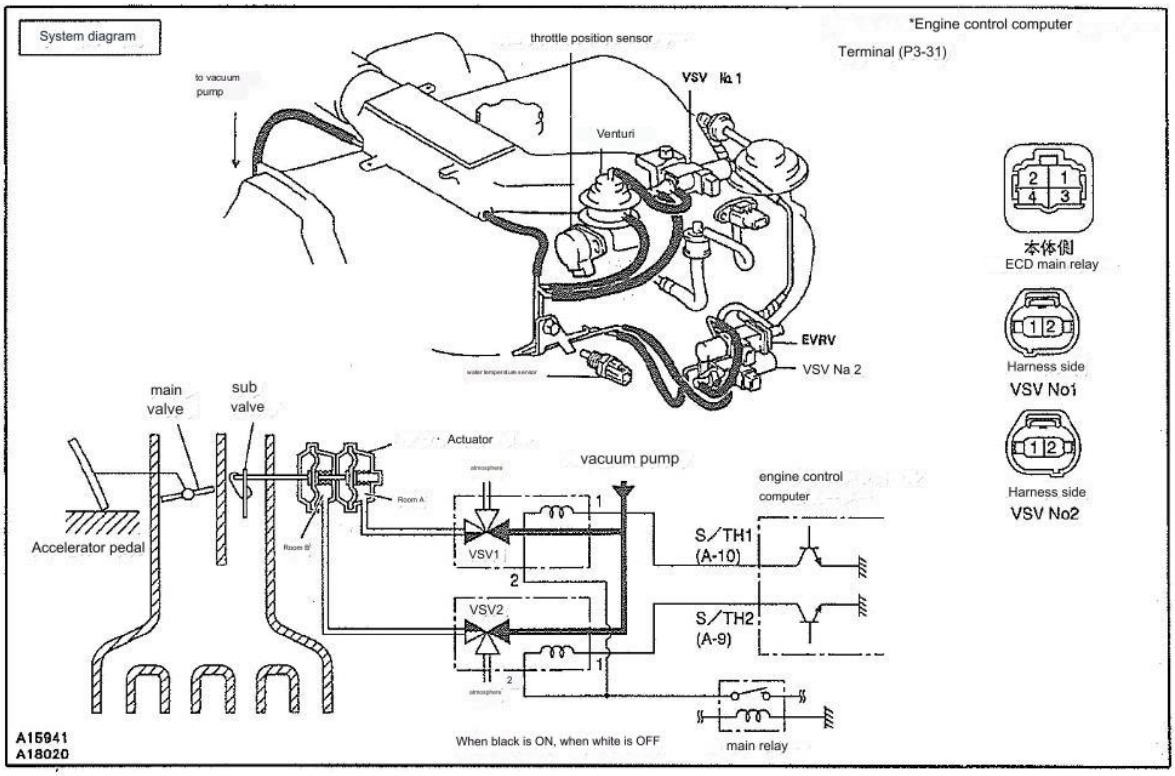
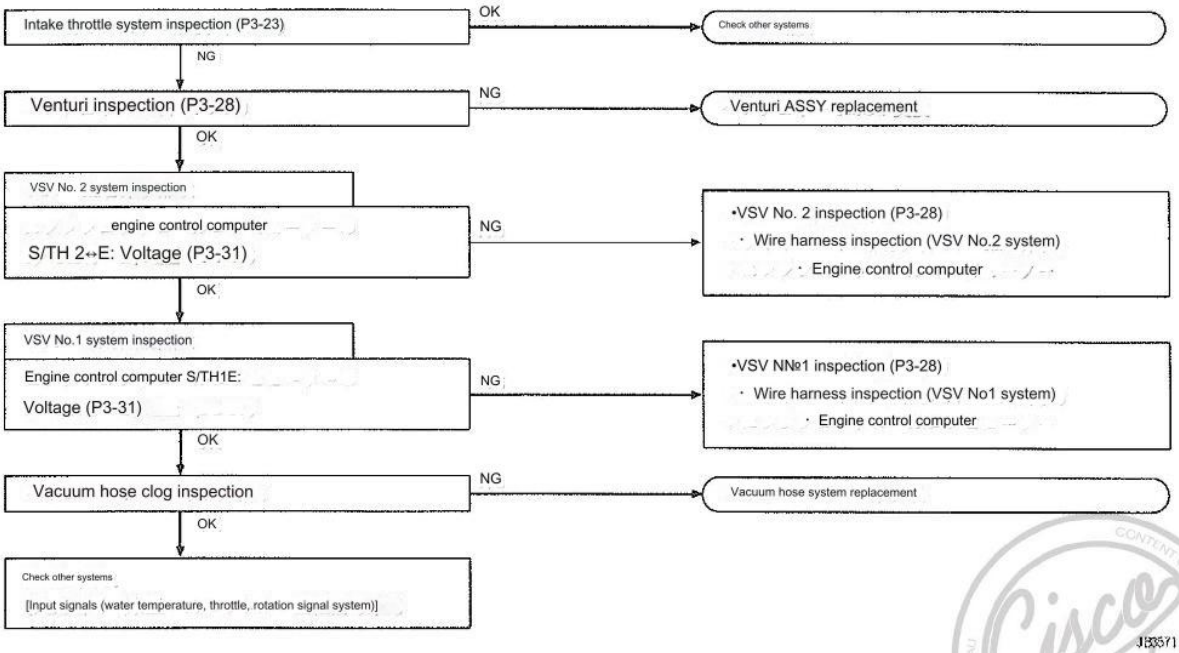
intake throttling system





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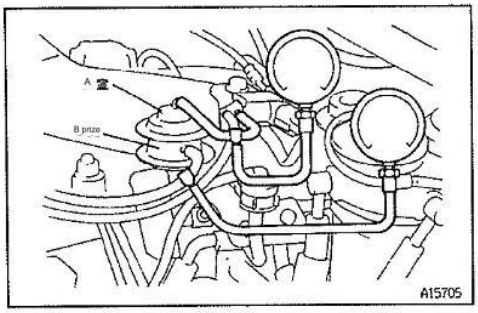

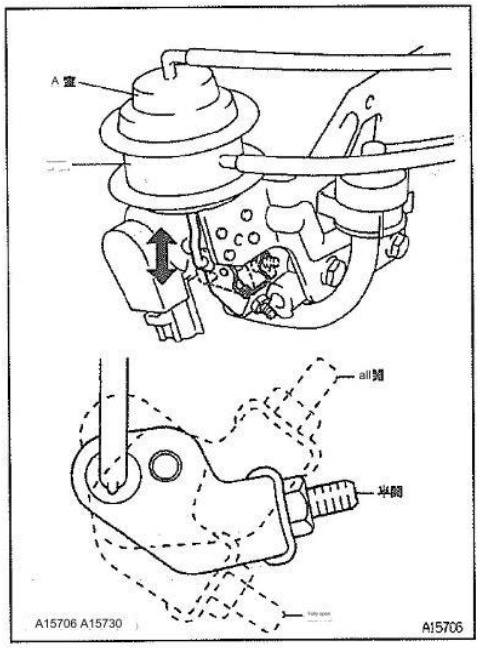

Functional inspection (intake throttle system)

Vacuum gauge installation	Attach the vacuum gauge to Venturi chamber A and B via 3-way.	
⇩	Install and remove the vacuum gauge with the engine stopped.	
Function check when cold (cooling water temperature 70°C or less)		
When idling	Vacuum gauge pointer does not move in both chambers A and B.	
	Diaphragm lower link position reference Link position lowest	
⇩	<Reference> Sup throttle valve fully open (same position as before starting)	
Function check during hot weather (after complete warm-up)		
When idling	Vacuum gauge pointer	Room A pointer does not move Room B pointer rises
	Diaphragm lower link position One step	higher than standard cold state
⇩	<Reference> Sub throttle valve half open	
Open the throttle valve slightly	Vacuum gauge pointer	Room A pointer does not move Room B pointer descends
	Diaphragm lower link position: Reference link position lowest	
⇩	<Reference> Sub-throttle valve fully open	
Idling → Engine stopped Lower diaphragm "Approximately 2 seconds later	Vacuum gauge pointer rises in both room A and room B.	
	Link position	Standards Link top
⇩	<Reference> Sub-throttle valve fully closed	
Engine stop Approximately Vacuum gauge pointer is 0 in both chambers A and B		
After 2	seconds Diaphragm lower link position reference Link position lowest	

<Reference> Sub throttle valve fully open

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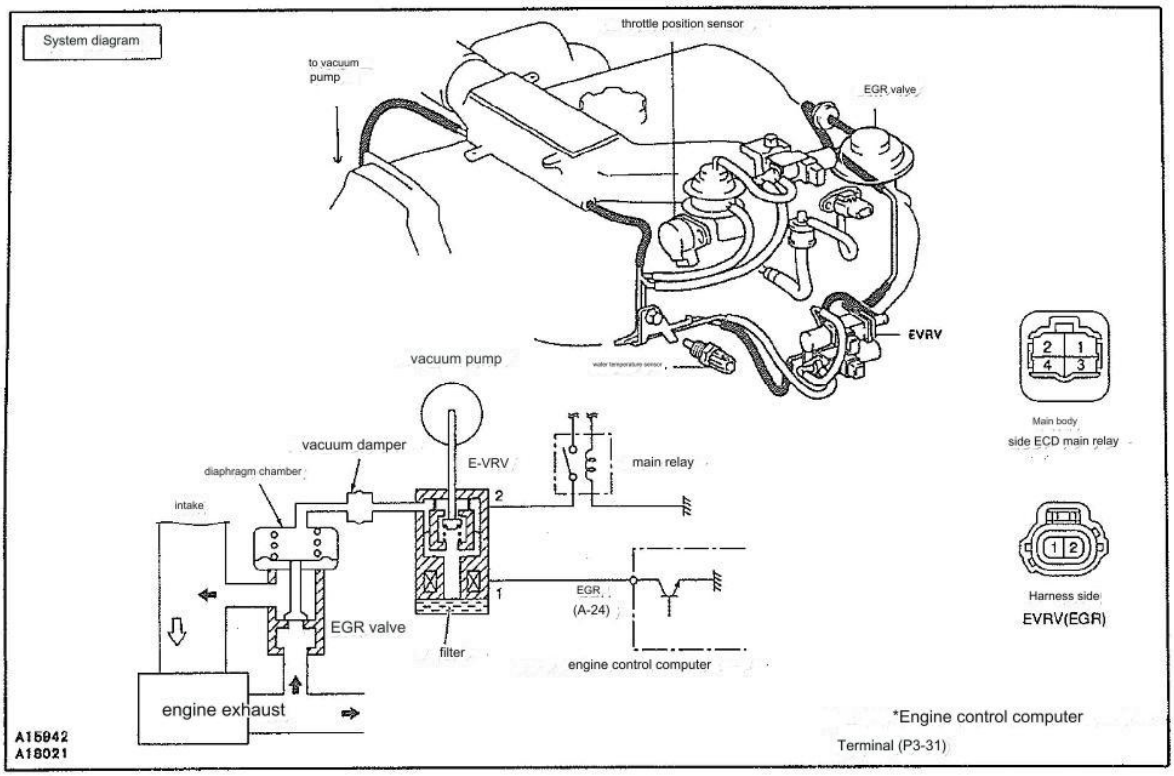
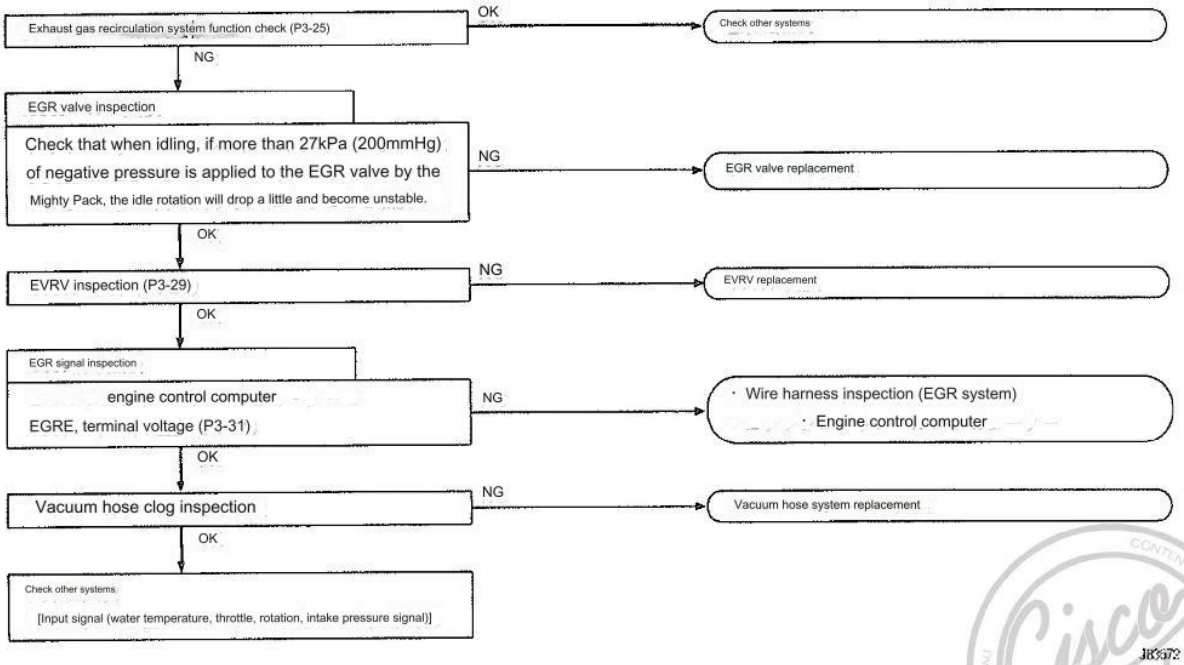
Exhaust gas recirculation device (EGR system)





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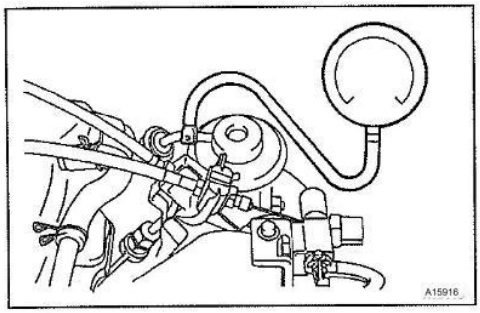

Functional inspection (EGR system)

"Installing the vacuum gauge" Installing the vacuum gauge on the EGR valve Installing and removing the vacuum gauge is done with the engine stopped.

Cold function check (cooling water temperature 55°C or less).

While the engine is rotating (all rotation range)	Vacuum gauge pointer	7kPa (50mmHg) or less

<Reference> EGR stop when cold

Function check during hot weather (cooling water temperature 60°C or higher)

When idling	Idle speed	standard 650~750r/min
	Vacuum gauge pointer: Rising	
Engine speed 1500r/min	Pacum gauge pointer rises	
From 1500r/min to full throttle 3000r/min	Vacuum gauge pointer	Momentary 7kPa (50mmHg) or less
Engine speed 4000r/min or more	Vacuum gauge pointer	7kPa (50mmHg) or less
Fully close the throttle quickly from 3500r/min	7kPa (50mmHg) vacuum	Momentarily drops below gauge pointer

<Reference> EGR stop at high load

<Reference> EGR stop at high load

<Reference> EGR stop during deceleration

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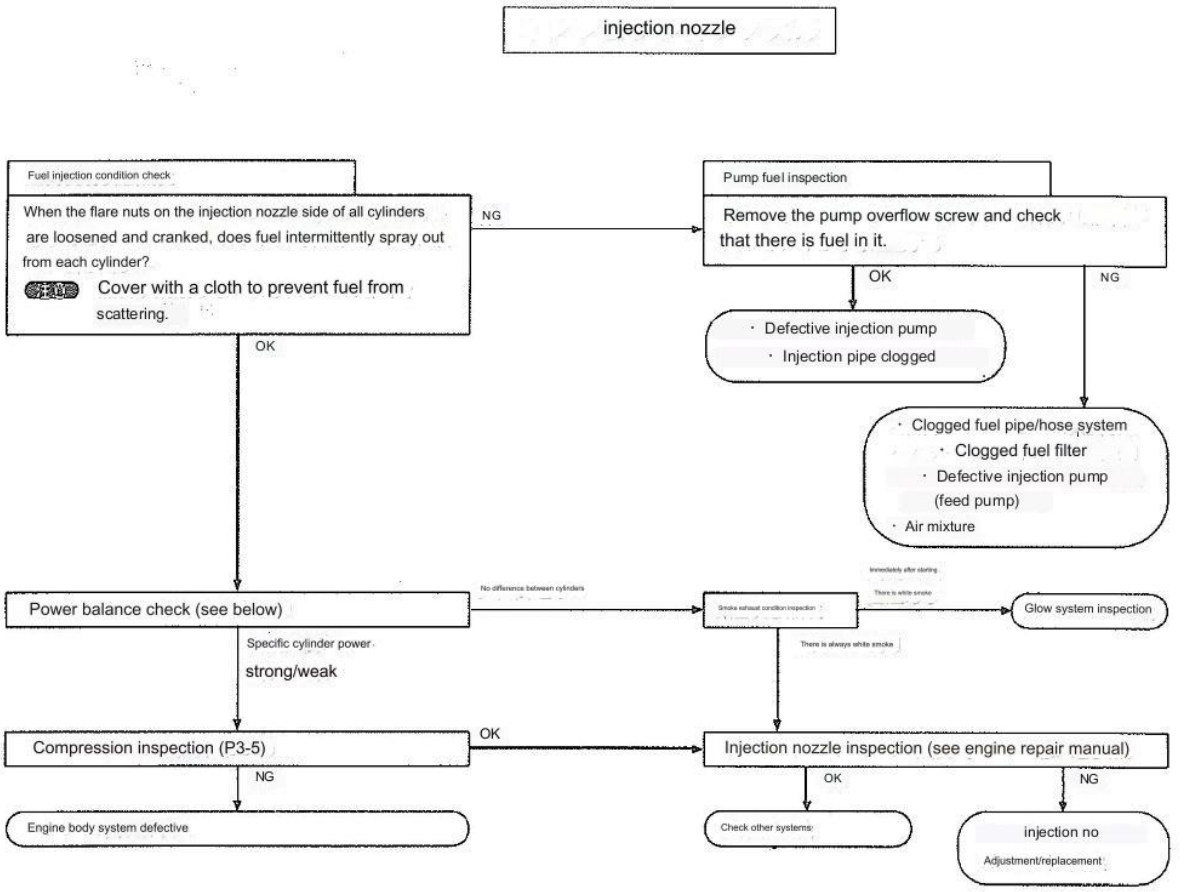

Power balance check

1 Power balance check

(1) During idling, loosen and tighten the flare nut on the intake pipe on the injection nozzle side as slowly as possible, and check for changes in engine speed and engine vibration.

There is no difference between cylinders in the drop in reference rotation speed.

· Cover with a cloth to prevent fuel from scattering.

- Unstable rotation when loosening the flare nut of one cylinder

The engine is activated as the ECD system attempts to clear the condition.

Carefully check the difference between the cylinders by increasing the engine speed slightly.

Ru.

<Reference> - There is no drop in engine speed. Also, cylinders with little change

There is.

→The power of that cylinder is weak.

· When a small amount of fuel is released from the flare nut, the engine

There is a cylinder whose rotational speed is stable.

→The power of that cylinder is strong

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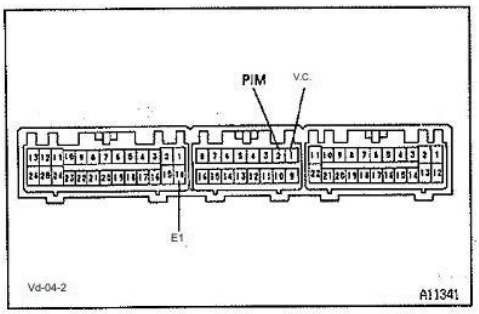

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Individual inspection

Turbo pressure sensor inspection

1 Turbo pressure sensor output voltage measurement

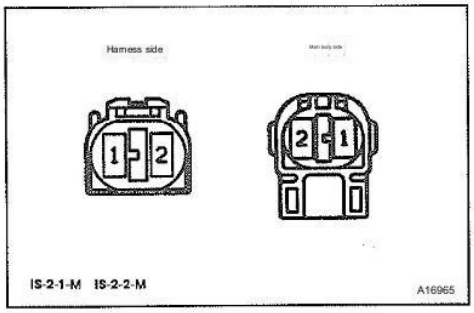
(1) Turn on the ignition switch.

(2) Measure the voltage between the computer's VC E1 terminals using a Toyota electrical tester.

Standard value 4.5~5.5V

(3) Using the turbocharger pressure gauge and Mighty Pack, apply pressure to the turbo pressure sensor and measure the voltage between the PIM E1 terminals of the computer. Reference value

pressure	Output voltage [V]
40kPa (300mmHg)	0.2~0.8
When open to atmosphere	1.3~1.9
69kPa (0.7kg/cml)	3.2~3.8



Inspection of solenoid valve

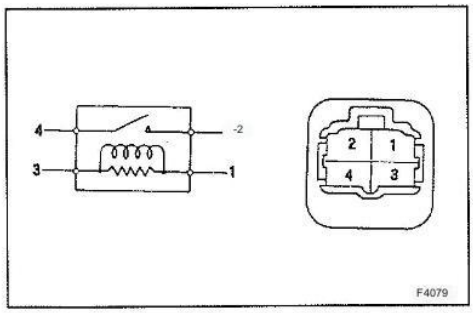
1 Resistance check

(1) Measure the resistance between the terminals using a Toyota electrical tester.

Standard value 1 (SPV) 2 (+B) Between terminals 1~22 (20°C)

1 (SPV) 10M2 or more between sensor cases

(Reference) If the solenoid Sbil valve is defective, the injection pump ASSY will need to be replaced.



Spill valve relay, ECD main relay inspection

1 Resistance and continuity check

(1) Measure the resistance between each terminal using a Toyota electrical tester.

Standard value between 13 terminals 65~1000 (20°C)

Between 2↔4 terminals 10M2 or more

(2) When battery voltage is applied between terminals 13 and 24, Check for continuity.

With reference continuity

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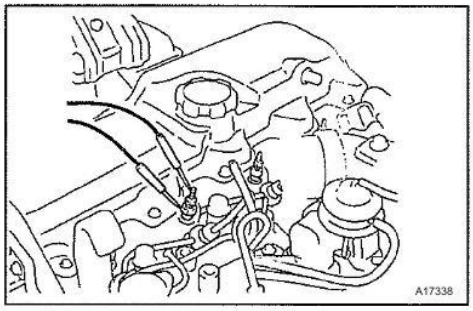
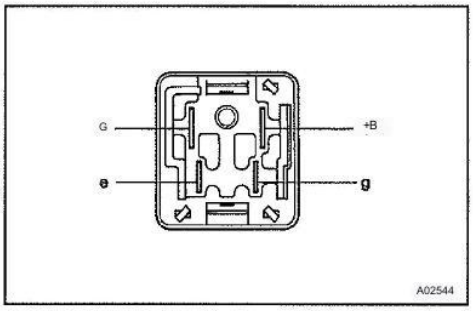


Glow plug inspection

Caution: Inspect the engine with the engine installed (with the glow plug connector removed), and avoid attaching or detaching the glow plug as much as possible.

1 Resistance check

(1) Measure the resistance between the terminals using a Toyota electrical tester. to be determined. Note: 0.80 Ω (20°C) If the resistance value exceeds 22, replace with a new glow plug.



Glow plug relay inspection

1 Resistance and continuity check

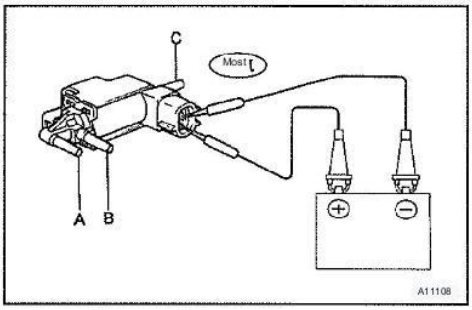
(1) Measure the resistance between each terminal using a Toyota electrical tester.

Standard value Between ge terminals 51~780 (20°C)

Between +B↔G terminals 10M2 or more

(2) When applying battery voltage between the ge terminals, check for continuity between the +BG terminals.

With reference continuity



VSV No.1 and No.2 inspection

1 Ventilation check

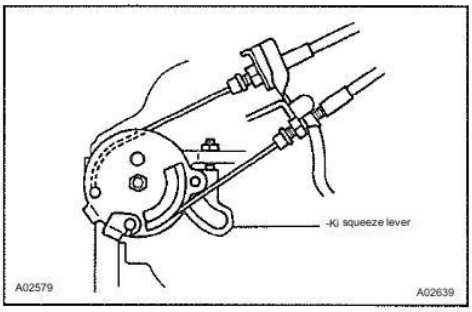
(1) Apply battery voltage across the VSV terminals and check whether there is ventilation between each boat when the coil is energized and when it is not energized.

At standard energization: Between A and B with ventilation

No ventilation between BC

When not energized: No ventilation between A and B

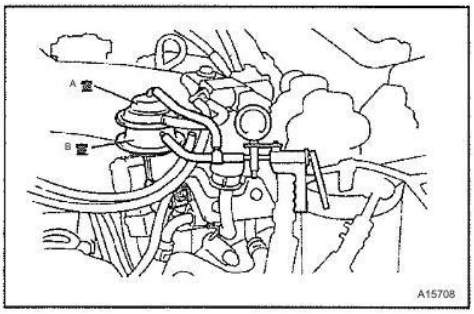
B→C with ventilation



venturi inspection

1 Venturi operation check

(1) When slowly operating the venturi link, check that the intake throttle lever moves smoothly without getting caught.



(2) Confirm that the rod is pulled up when applying negative pressure of approximately 60kPa (450mmHg) to the venturi's diaphragm chamber B.

(3) Start the engine and check the diaphragm chambers A and B while idling.

When a negative pressure of approximately 60kPa (450mmHg) is applied to the chamber at the same time, the engine is about to stop or has stopped.

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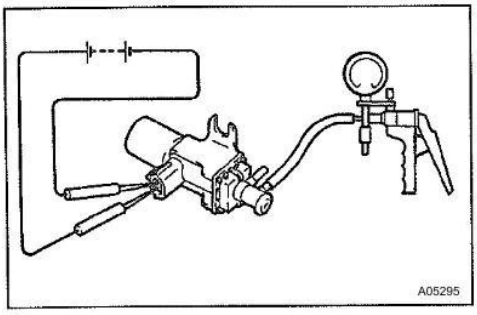


EVRV inspection

1 Resistance check

(1) Measure the resistance between the terminals using a Toyota electrical tester.

Standard value 11~130 (20°C)

2 Airtightness check

(1) Connect Mighty Pack to the port shown in the figure and apply negative pressure.

Criteria for the needle to rise above 47kPa (350mmHg)

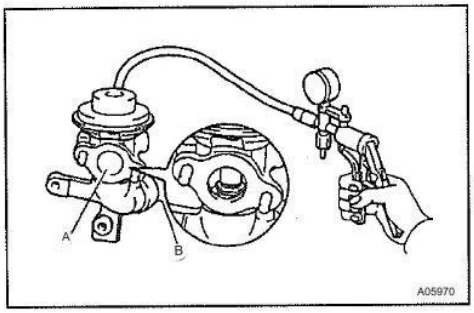
(Reference) Even if negative pressure is leaking, there is no problem if the pointer rises by 47kPa (350mmHg) or more.

3 Operation check

(1) Apply 6V (such as a dry battery) between the terminals.

(2) Connect Mighty Pack to the port shown in the figure and apply negative pressure.

Reference negative pressure does not rise



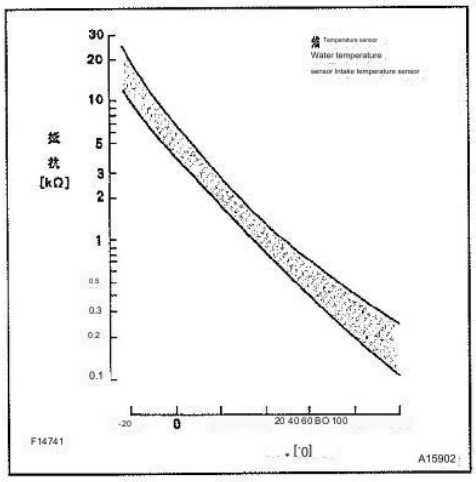
EGR valve inspection

1 Ventilation check

(1) Using Mighty Bag, apply negative pressure to the diaphragm chamber and check whether there is ventilation between AB.

Standard 14kPa (100mmHg)...No ventilation

27kPa (200mmHg)...With ventilation



Intake temperature sensor, water temperature sensor, fuel temperature sensor inspection

1 Resistance check

(1) Measure the resistance between the terminals using a Toyota electrical tester.

Standard value 2~3KΩ (20°C)

0.2~0.4KΩ (80°C)

注意 When inspecting the sensor by submerging it in water, be careful not to let water get into the terminal. Also, wipe off any water droplets on the sensor after inspection.

Speed sensor (in the combination meter) ("Electrical" - "Meter & Gauge" 点検

- See "Speed sensor (in combination meter)")

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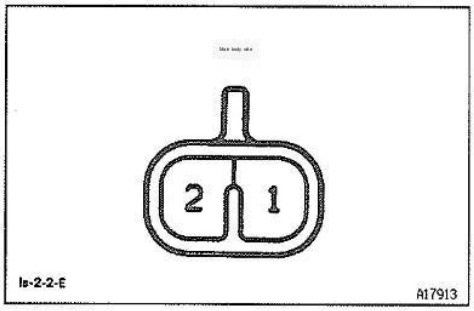


Diesel engine revolution sensor inspection

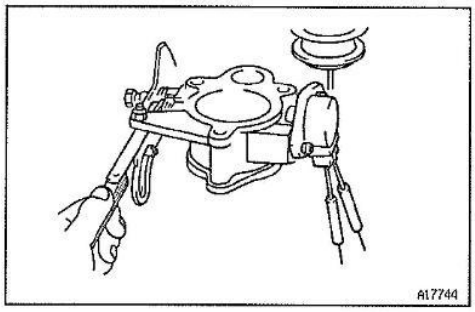
1 Resistance check

(1) Measure the resistance between the terminals using a Toyota electrical tester.

Standard value 2 (NE+)1 (NE-) Between terminals 200~2600

(20°C) 1 (NE-) → Between center case 10M2 or more

<Reference> If the diesel engine revolution sensor is defective, the injection pump ASSY will need to be replaced.



Throttle position sensor inspection

<Reference> If the throttle position sensor is defective, the venturi ASSY will need to be replaced.

1 Resistance and continuity check

(1) Insert a thickness gauge between the intake throttle lever and the full-close stopper, and use a Toyota electrical tester to check 2 (IDL) 1 (E

2) Check for continuity between terminals.

Standard 0mm (fully closed) Continuous (2.3k or less)

1.6 hon. No continuity

(2) Using a Toyota electrical tester, measure the resistance between the 4 (VC) and 1 (E2) terminals.

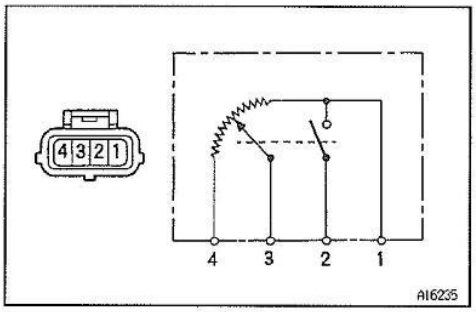
Standard value 3.9~9.0KΩ

(3) Using a Toyota electrical tester, measure the resistance between the 3 (VTA) and 1 (E2) terminals when the Venturi link is fully opened from fully closed.

Standard Resistance increases proportionally as the venturi link opens Resistance when

〈参考〉 fully closed: 0.3~6.3 kΩ Resistance

when fully open: 3.1~12.1 kΩ



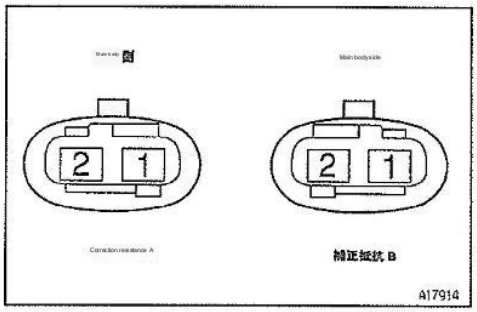
Compensation resistor A (gray) and B (brown) inspection

1 Resistance check

(1) Measure the resistance between the terminals using a Toyota electrical tester.

to be determined.

Reference value 0.1~2.5KΩ



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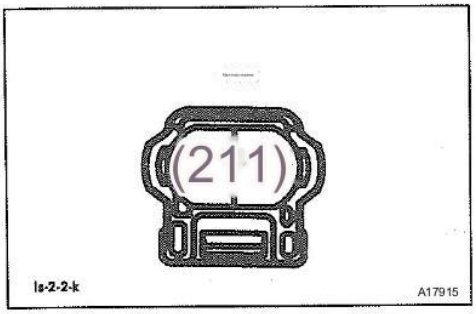


Timer control valve inspection

1 Resistance check

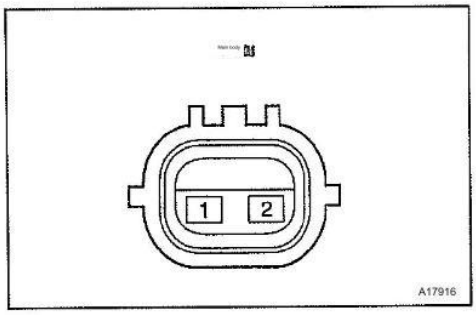
(1) Measure the resistance between the terminals using a Toyota electrical tester.

Reference value 1 (+B) 2 (TCV) Between terminals 10~140 (20°C)

2 (TCV) 10M2 or more between sensor cases

2 Operation check

(1) Check the sound of the solenoid when applying battery voltage between the terminals of the timer control valve connector.



Crank position sensor inspection

1 Resistance check

(1) Measure the resistance between the terminals using a Toyota electrical tester.

Standard value Between terminals 19~320

(-10~50°C) 24~370 (50~100°C)

1 (TDC-) → 10M2 or more between sensor

注意 case Never drop or subject the crank position sensor to impact. Do not use it if it has been dropped or subjected to impact.

Engine control computer inspection

1 Computer operation check

(1) Connect the mini test leads to the Toyota Electrical Tester and measure the voltage between each terminal.

注意 · Inspect the connector from the back side with the computer connected.

· Before measurement, perform a power supply check (10 to 14V when IG is ON) and a ground check (52V or less between each ground terminal and engine and body when IG OFF).

(2) Use an oscilloscope to confirm that pulses are generated between each terminal.

(Reference) The * mark in the reference value column shows the oscilloscope waveform after the list.

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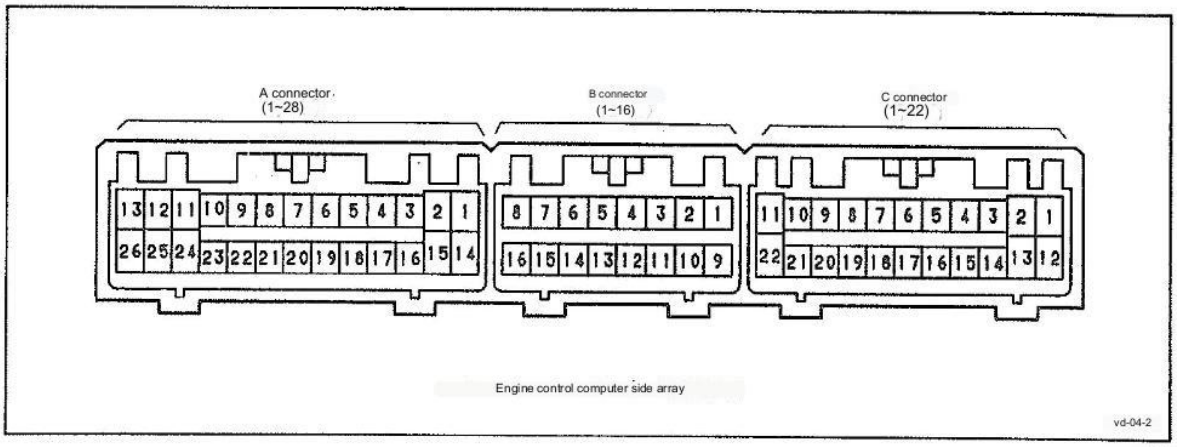

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Terminal No.	Terminal name	Terminal No.	Terminal name	Terminal No.	Terminal name	Terminal No.	Terminal name	Terminal No.	Terminal name
A−1		A−17	NE−	B−1	V.C.	C−1	BATT	C−17	E.C.
2		18	TDC−	2	PIM	2	S−REL	18	TAC
3		19		3	THA	3	M−REL	19	ACMG
4	NE+	20		4	THW	4		20	HSW
5	TDC+	21		5	THF	5	W	21	
6	TNG	22		6	VRP	6	ATRC	22	NSW
7		23		7	TE 2	7	G−IND		
8	TRA	24	EGR	8	VF	8	VTH		
9	S/TH 2	25	THWO	9	E2	9	SP 1		
10	S/TH 1	26	E02	10		10	AC 1		
11	SPV			11	V.A.	11	STA		
12	TCV			12	IDL	12	+B		
13	E01			13	AC 2	13	SVR		
14	E1			14	VRT	14	IGSW		
15				15	TE 1	15			
16				16		16			

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Tensho lineage	terminal	input/output	Measurement condition	Reference value [V]
power system	BATT E1	input	Always	9~14
	+B E1	input	Engine stopped, IG switch ON	9~14
	IGSW → E1			
	VC E1	output	Engine stopped. IG switch ON	4.5~5.5
Turbo pressure sensor system	PIM E1	input	When applying negative pressure of 40 kPa (300 mmHg)	0.2~0.8
			When open to atmosphere	1.3~1.9
			When applying a pressure of 69 kPa (0.7 kgf/cm²)	3.2~3.8
Throttle position sensor system	VA E1	input	Accelerator fully closed	0.3~0.8
			Full throttle	3.2~4.9
	IDL ↔ E1	input	Accelerator fully closed	0~3
			Full throttle	9~14
crank position sensor system	TDC+ TDC input		After warming up, at idle speed	waveform 1
Rotation signal system	NE+NE-	input	After warming up, at idle speed	waveform 1
speed sensor system	SP1 E1	input	When running at approximately 20km/h	waveform 2
Water temperature sensor system	THW E1	input	Cooling water temperature 60~120°C (when warmed up)	0.2~1.0
Intake temperature sensor system	THA E1	input	Intake air temperature 0~80°C (when using a scooping machine)	0.5~3.4
*Fuel temperature sensor system	THF ↔ E1	input	Engine stopped, IG switch ON (when cold)	0.5~3.4
Correction resistance system	VRP E1	input	Engine stopped, IG switch ON	0.2~4.5
	VRT E1	input	Engine stopped, IG switch ON	0.2~4.5
Solenoid subbil valve system	SPV+E1	output	Engine stopped, IG switch ON	9~14
			After machine loading, at idle rotation	waveform 3
Timer control valve system	TCV E1	output	Engine stopped, IG switch ON	9~14
			After warming up, at idle speed	waveform 4
VSV1 series for penturi control	S/TH1 ↔ E1	output	VSV OFF for penturi control (After warming up, at idle rotation)	9~14
			VSV for venturi control ON (approximately 2 seconds after the engine stops under the above condition)	0~3
VSV2 series for penturi control	S/TH2 ↔ E1	output	VSV OFF for venturi control (when idling when the cooling water temperature is below 70°C)	9~14
			VSV ON for venturi control (when idling when the cooling water temperature is 75°C or higher)	0~3
EGR system	EGR ↔ E1	output	Engine stopped, IG switch ON	9~14
			When EGR is ON (engine speed maintained at 1500r/min after warming up)	waveform 5
glow relay system	S—REL ↔ E1	output	During cranking	9~14
			After machine loading, at idle rotation (Over 120 seconds passed after engine start)	0~1.5
Glow indicator lamp system	G—IND ↔ E1	output	IG switch OFF ON	0~3
			After warming up, at idle speed	9~14
check engine light system	W E1	output	When the check engine warning lamp lights up (disconnect the water temperature sensor connector)	0~3
			After warming up, when idling (warning lamp off)	9~14

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Inspection system	terminal	input/output	fixed conditions	Reference value [V]
Starter signal system	STA E1	input	During cranking	6 or more
Neutral start switch system	NSW E1	input	Shift position P, N range	0~3
			Shift position other than P and N ranges	9~14
A/C switch system	AC1 E1	input	A/C ON (Magnetic clutch ON)	0~1.5
			A/C OFF	7.5~14
	AC2 ↔ E1	input	When stopped with A/C ON (N range) A/C idle up ON (sensor 7℃ or higher after evaporation)	0~3
			When stopped with A/C ON (N range) A/C idle up OFF (sensor below 6℃ after evaporation)	4.5~5.5
Air conditioner magnetic relay system	ACMG ↔ E1	output	A/C ON (Magnet ON)	0~3
			A/C OFF	4.5~5.5
ECD main relay system	M-REL ↔ E1	output	Engine stopped, IG switch ON	9~14
			More than 2 seconds have passed after the IG switch was turned off.	0~1.5
Spill valve relay system	SVR → E1	output	Engine stopped, IG switch ON	0~1.5
Tachometer output system	TAC E1	output	After warming up, at idle speed	waveform 6
feedback system	VF E1	output	Short circuit between TEt↔E₁ terminals of diagnosis connector (when all diagnosis items are normal)	4.5~5.5
			Disconnect the water temperature sensor connector and short circuit between the TE E₁ terminals of the diagnosis connector (when diagnosis is abnormal)	0~1
heater idle up system	HSW E1	input	When the heater idle up switch is held down Other than	0~3
			the above	9~14
Test terminal system	TE 1 TE 2 → E1	output	Engine stopped, IG switch ON	9~14
			Short circuit between T↔E terminals, Tt2→E terminals of diagnosis connector	0~3
Water temperature data output system	THWOE1	output	After warming up, at idle speed	waveform 7
TRC control signal system	TRA E1	input	More than 3 seconds have passed since the engine stopped and the IG switch was turned on.	9~14
TRC prohibition signal system	TNG E1	output	More than 3 seconds have passed since the engine stopped and the IG switch was turned on.	waveform 8
			When the throttle position sensor connector is disconnected during idling	0~1.5
Throttle opening output signal system	VTH ↔ E1	output	Engine stopped, IG switch ON	waveform 9
Requested torque signal system	ATRC ↔ E1	input	More than 3 seconds have passed since the engine stopped and the IG switch was turned on.	waveform 10
Earth type	E1 E2 E01 Body earth E02 E.C.	earth	(Continuity check)	(Constant conduction)

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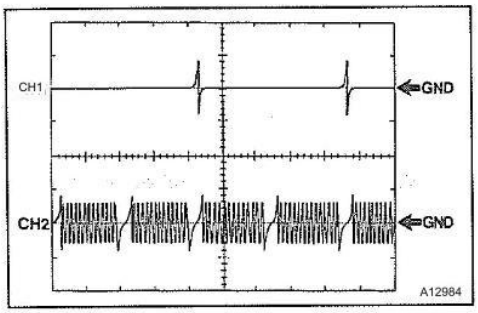


(Reference) Oscilloscope waveform

waveform 1

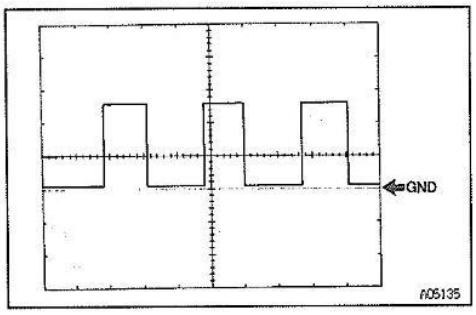
Measurement terminal CH1: TDC+ TDC- CH2: NE+→NE-

Instrument set 2V/DIV, 20ms/DIV

Measuring conditions After warming up, at idle speed

注意 As the engine speed increases, the waveform period becomes shorter.

3



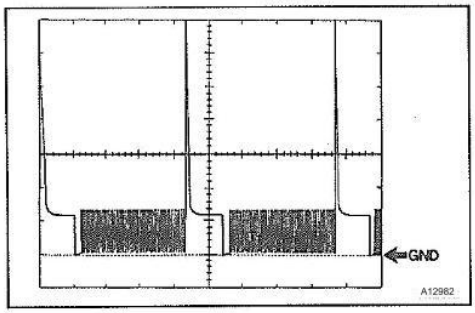
waveform 2

Measurement terminal SP1 E1

Instrument set 5V/DIV, 20ms/DIV

Measuring conditions: When driving at approximately 20km/h

注意 As the vehicle speed increases, the waveform period becomes shorter.



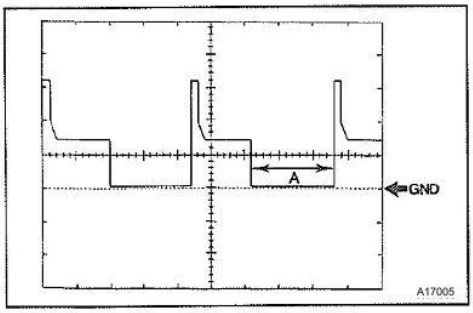
waveform 3

Measurement terminal SPV-E1

Instrument set 10V/DIV, 10ms/DIV

Measurement conditions: After warming up, during idling

注意 As the engine speed increases, the waveform period becomes shorter.



waveform 4

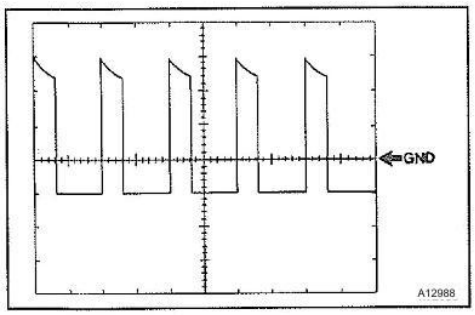
Measurement terminal TCV-E1

Instrument set 10V/DIV, 10ms/DIV

Measurement conditions: After warming up, during idling

Note As the engine speed increases, the waveform period may change.

A changes depending on the advance angle.



waveform 5

Measurement terminal EGR E1

Instrument set 5V/DIV, 1ms/DIV

Measuring conditions EGR ON (engine speed kept at 1500 r/min after warm-up)

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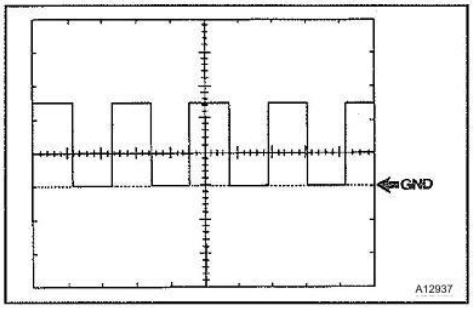
3



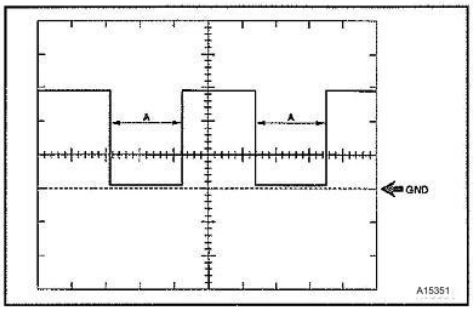
waveform 6

Measurement terminal TAC E 1

Instrument set 5V/DIV, 2ms/DIV

Measurement conditions After suction, at idle

Note: As the engine speed increases, the waveform period becomes shorter.



waveform 7

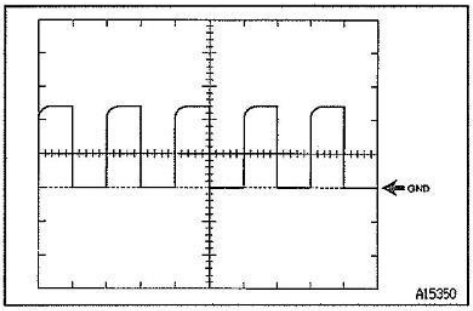
Measurement terminal THWO E1

Instrument set 5V/DIV, 0.1ms/DIV

Measurement conditions: After warming up, during idling

<Reference> A changes depending on the cooling water.

	Below 35°C	Approximately 75°C	90°C or higher
A	8 ms	278.5ms	385ms

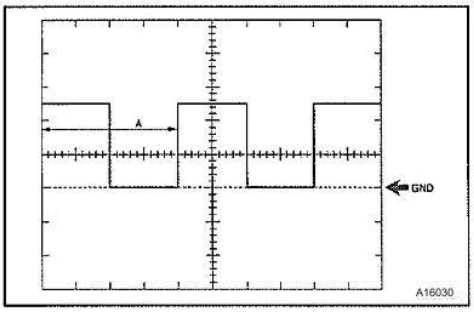


waveform 8

Measurement terminal TNG E1

Instrument set 5V/DIV, 50ms/DIV

Measurement conditions Engine stopped, 3 seconds or more elapsed after IG switch was turned on



waveform 9

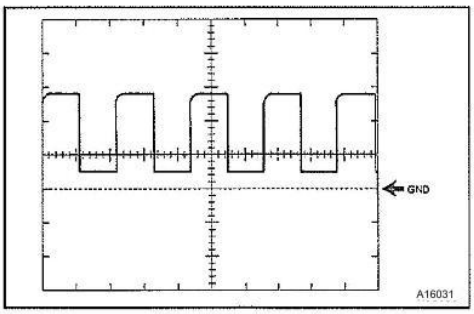
Measurement terminal VTH E1

Instrument set 2V/DIV, 1ms/DIV

Measuring conditions Engine stopped, IG switch ON

A changes depending on the throttle opening.

Throttle opening	Fully closed	Fully open
A	4 ms	7.3ms



waveform 10

Measurement conditions ATRC E 1

Instrument set 5V/DIV, 5ms/DIV

Measurement conditions: Engine stopped, 3 seconds or more elapsed after IG switch was turned on (reference) When TRC is activated, the cycle changes to 4~7ms.

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2 Computer data inspection

(1) Insert the program IC card into the Toyota Diagnosis Reader.

(2) Connect the power harness to the Toyota Diagnosis Reader.

(3) Connect the Toyota Diagnosis Reader to the Diagnosis Connector.

(4) Turn on the ignition switch or start the engine.

(5) Enter the engine system code into the Toyota Diagnosis Reader.

Engine system code...2F0

(6) Display the ``Engine ECU data" on the screen under ``CHECK NATURE SELECT" and press the ○ switch.

3 Precautions when reading computer data

Computer data values vary widely due to slight differences in measurement, differences in the measurement environment, changes in the vehicle over time, etc., and it is difficult to provide clear reference values (judgment values).

NOTE - Problems may occur even if the values are within the reference values.

- For delicate environments such as heavy idling and rough idling, it is necessary to compare data for cars of the same type and under the same conditions, and make a comprehensive judgment based on all items of computer data.

*QFN...Injection timing

(The displayed angle is from a certain reference position and is different from the actual injection angle.)

•AAC...Injection timing

(Display differs from the timing from TDC standards.)

*S/TH2…Intake throttle sub-throttle

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Item	Inspection conditions		Reference	Inspection items in case of abnormality
QFN*1 (QFIN)	At idle rotation		53~65°CA	VA voltage NE signal Fuel*2
	At 2000r/min (no load)		42~53°CA	
	At 3000r/min (no load)		33~41°CA	
AAC*1 (AACT)	At idle rotation		11~16°CA	NE signal TDC signal VA, PIM THW voltage A-chance single system abnormality
	At 2000r/min (no load)		17~22°CA	
	At 3000r/min (no load)		21~26°CA	
N.E.	At constant engine rotation		No major changes	NE signal
PIM*1	When IG switch is ON (atmospheric pressure)		99~101 kPa {740~760mmHg}	VC, PIM
	At idle rotation		94~96 kPa {630~720mmHg}	
	At 2000r/min (no load)		99~104kPa {740~780mmHg}	
	At 3000r/min (no load)		108~113kPa {810~850mmHg}	
THW	Cold start → warm-up operation		gradually rise	THW voltage
	When fully warmed up		80~95°C	
V.A.	When the accelerator is fully closed		1.0V or less (4° or less)	VC, VA Voltage
	At full throttle		2.5V or more (50° or more)	
	Accelerator fully closed → fully open		Continuously changing	
SPD	While driving (compared to speedometer)		There is no big difference	SP2 signal
THF*3	Cold start → warm-up operation		gradually rise	THF voltage
	When fully warmed up		40~80°C	
intake throttle S/TH 2	At idle rotation	When fully warmed up	ON	VA voltage THW voltage
		Cold	OFF	
	Accelerator fully closed → open		ON→OFF	
EGR*1	At idle rotation		ON	VA voltage THW voltage PIM voltage
	At 1500r/min (no load)		ON	
	At full throttle		OFF	
glow plug relay	When IG switch is OFFON		OFF→ON	STA voltage ECD ECU defective
	During cranking		ON	
STA	During cranking		ON	STA voltage
IDL	Accelerator fully closed → open		ON→OFF	IDL voltage
A/C	Air conditioner OFF→ON		OFF→ON	A/C voltage
NSW	A/T N range D range		ON→OFF	NSW 钳压

*1...Fully warmed up state

*2...When using No. 3, special No. 3 diesel oil in the summer, etc. *3...There is a possibility of further variation depending on outside temperature, remaining fuel amount, etc.

correction flag	1		2		3		4	
	Intake throttle S/TH2		EGR		———		glow plug relay	
switch condition	1	2	3	4	5	6	7	8
	STA	IDL	A/C	NSW	———	———	———	DIAG

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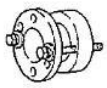
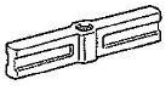
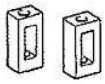
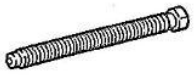
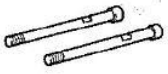
TOC48888

Engine ASSY

Preparation items

S S T

	09213-14010	Crankshaft pulley holding tool	Injection pump pulley fixing
	(91651-60855)	Bolt	For fixing the crankshaft pulley and injection pump drive pulley.
	09330-00021	Companion flange holding tool	For fixing the crankshaft pulley and injection pump drive pulley.
	09950-50010 Puller C set		
	(09951-05010) Hanger 150		For removing the crankshaft pulley and injection pump drive pulley.
	(09952-05010) Slide arm		For removing the crankshaft pulley and injection pump drive pulley.
	(09953-05010) Center bolt 100		For removing the crankshaft pulley and injection pump drive pulley.
	(09953-05020) Center bolt 150		For crankshaft pulley removal
	(09954-05020) Crow №2		For injection pump drive pulley removal
	(09954-05030) Crow № 3		For crankshaft pulley removal

tool

	09090-04020 Engine sling device	Engine removal/removal
	09258-00030 Hose plug set	For maintaining hose airtightness

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Deep socket wrench (14mm)	10203	Front exhaust pipe removal and removal

Oils and fats/others

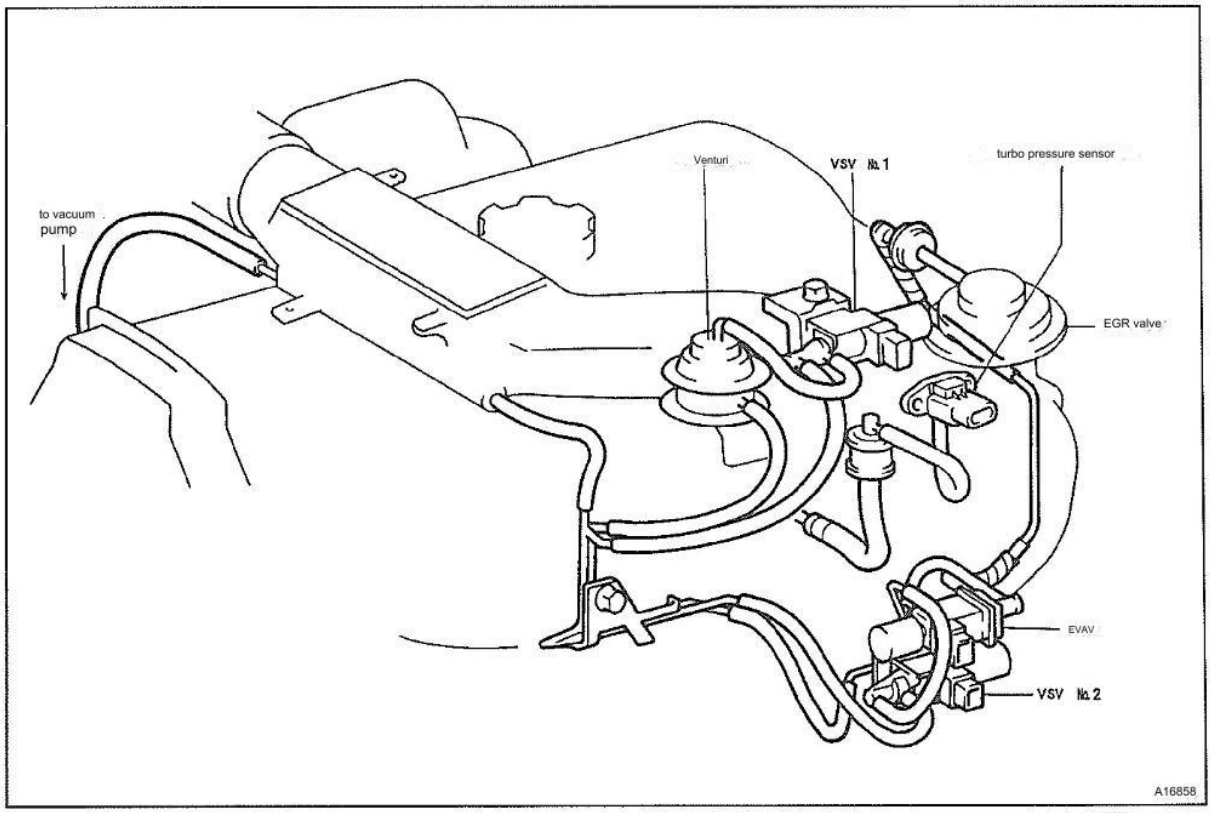
Adhesive 1324	50401	Drive plate, torque converter bolt For application
Toyota genuine auto fluid D-II	30308	For transmission replenishment
Toyota genuine long life coolant	32001	For cooling water injection
Toyota genuine engine oil	32103	For replenishment
rope or wire	52014	For hanging A/C compressor and P/S pump

T0048900

3

vacuum piping

piping diagram



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T0048801

Engine ASSY removal and removal

Tightening torque list

Tightening point		Tightening torque [N· m {kgf· cm)]
A/C compressor ×	A/C compressor bracket	27.5 (280)
P/S vane pump X	P/S pane pump pulley	43 (440)
	bracket	39 (440) (set bolt) 64 (650) (through bolt)
EX front pipe X	outlet elbow	62 (630)*
	EX center pipe	43 (440)
engine mounting insulator x	front suspension cross member	27 (280)
engine rear mounting insulator ×	engine rear support member	13.5 (135)
engine rear support member ×	Pode	38.2 (390)
Steering gear ASSY ×	Suspension cross member	68.6 (700) (right side) 58.8 (600) (left side)
sliding yoke x	Steering gear ASSY	35.3 (360)
	intermediate shaft	35.3 (360)
stiffener plate ×	cylinder block	37.3 (380)
	clutch housing	37.3 (380) (M10) **68.6 {700) (M12)**
clutch housing ×	starter	56 (570)
	cylinder block	71.6 (730)
starter ×	B terminal terminal	21.1 (215)
drive plate ×	torque converter	41.2 (420)
	Crankshaft	98 (1000)

*.....Non-reusable parts

JB2974

Points to note during attachment/detachment work

1 Disconnect the fuel hose

· To disconnect the fuel hose, remove the fuel tank cap.

Completely lower the internal pressure of the fuel tank before loosening, and

Cover the disconnected part with a cloth to prevent fuel from scattering.

2 P/S vane pump removal and removal

· The P/S vane pump comes with a P/S hose and can be removed and wire etc.

Hang it up.

3 A/C compressor removal and removal

· The A/C compressor comes with an A/C hose and can be removed and replaced with a wire.

Hang it with something like.

4 Drive plate removal and removal

("Engine body" - "Engine rear oil seal"

-Refer to "Points to keep in mind when attaching and detaching work 2")

5 Propeller shaft installation and removal

(See "Propeller Shaft" and "Propeller Shaft")

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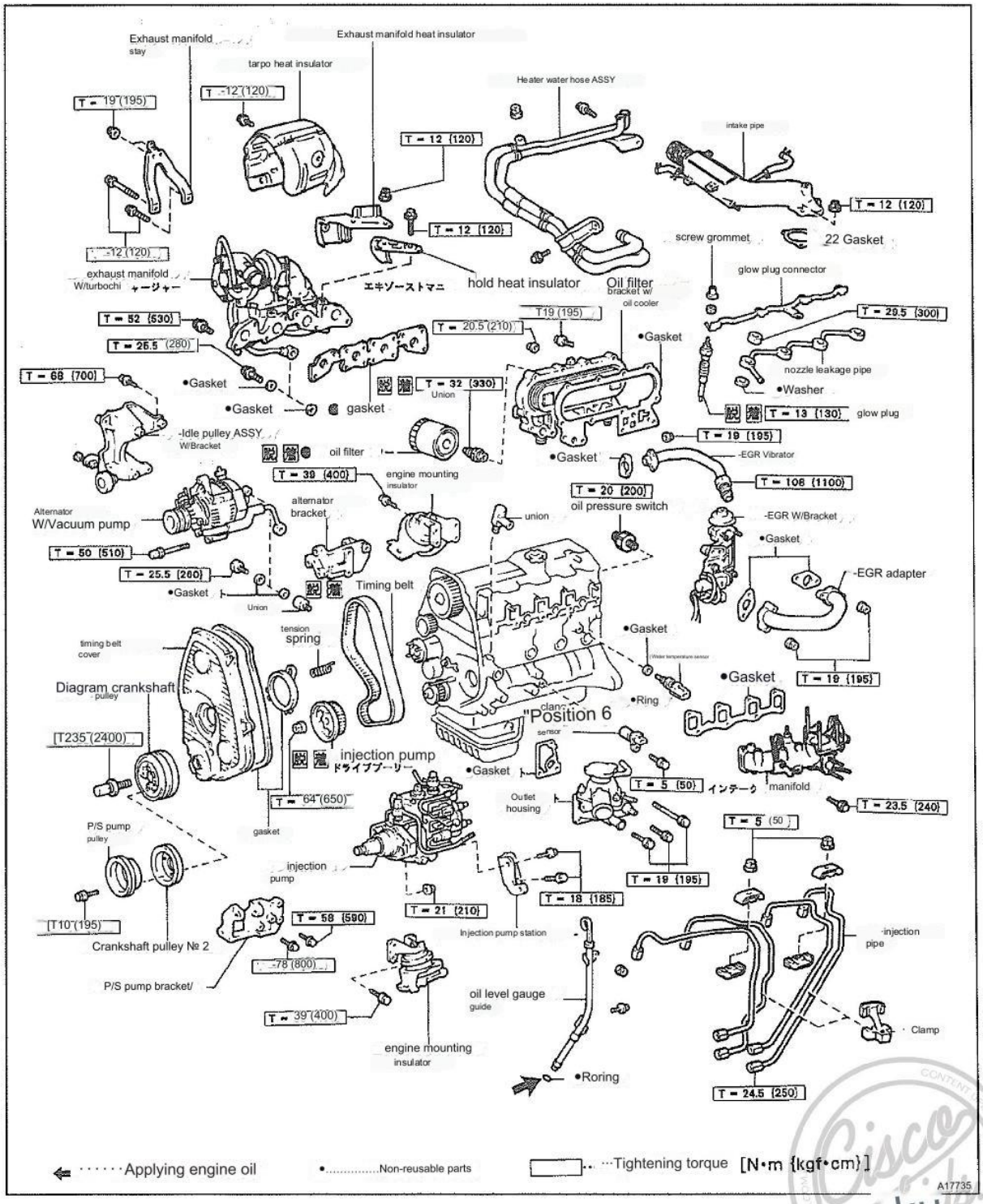
3

T004802

Partial engine exploded

diagram



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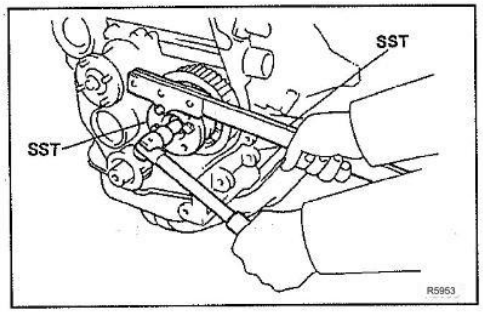
Points to note when disassembling and reassembling work

1 Removing and installing
the timing belt (see “Engine body” and “Timing belt”)

2 Glow plug removal
(See "ECD System" and "Glow Plug")

3 Crankshaft pulley removal
and removal (Refer to “Engine body” - “Timing belt” - “Notes on removal work 1”)

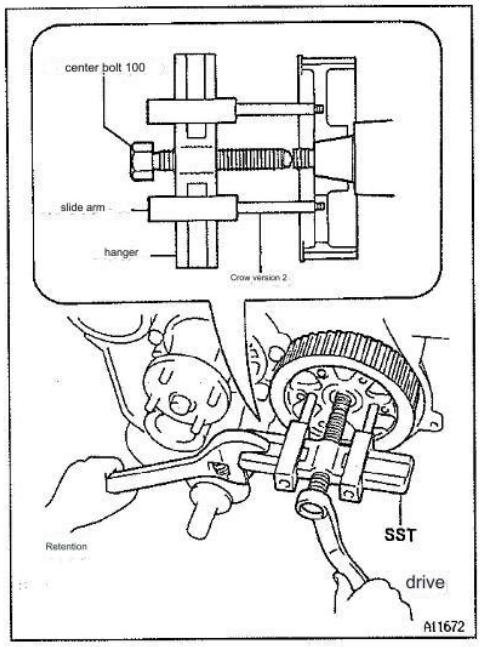
3



4 Injection pump drive pulley removal and removal

- Attach and remove the pulley fixing nut with the pulley
  fixed using SST.

S S T 09213-14010 09330-00021 91651-60855



- Remove the injection pump drive pulley
  using SST.

S S T 09951-05010 09952-05010 09953-05010
09954-05020

注意 Apply oil to the threaded part and tip of the center bolt 100 before use.

5 Oil filter installation/
removal (see “Luplication”, “Oil filter & union (for oil filter)”, “Notes
on installation/removal work 1”)

6 Oil filter union removal
(“Lubrication”) “Oil filter & union (for oil filter)”
Points to note when attaching and detaching work 2」参照)

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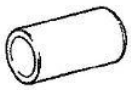
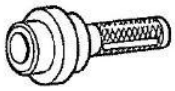
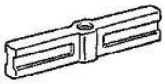
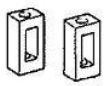
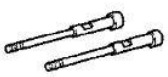
T0048003

engine body

Preparation items

S S T

	09213-54015 Crankshaft booley holding tool	For fixing crankshaft pulley and camshaft timing pulley
	(91651-60855) Bolt	For fixing crankshaft pulley and camshaft timing pulley
	09223-00010 Cover & Seal Replacer	For installing the crankshaft front oil seal.
	09223-15030 Oil Seal & Bearing Replacer	For engine rear oil seal installation
	09223-50010 Crankshaft front oil seal replacer	For crankshaft timing pulley installation
	09330-00021 Companion flange holding tool	For fixing crankshaft pulley and camshaft timing pulley
	09950-50010 Blur C set	
	(09951-05010) Hanger 150	Crankshaft pulley, crankshaft timing pulley and camshaft timing pulley removal
	(09952-05010) Slide arm	Crankshaft pulley, crankshaft timing pulley and camshaft timing pulley removal
	(09953-05010) Center bolt 100	For removing camshaft timing pulley
	(09953-05020) Center bolt 150	Crankshaft pulley and crankshaft For removing the foot timing pulley
	(09954-05010) Crow № 1	Crankshaft timing pulley removed use

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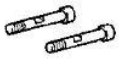
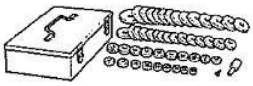
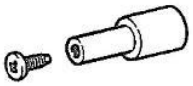
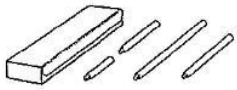
(09954-05020) Crow №2 	For removing crankshaft pulley and camshaft timing pulley
09950-60010 Replacer set 	
(09951-00310) Replacer 31	For installing camshaft oil seal
Replacer 54 09951-00540 70124	For installing camshaft oil seal
(09952-06010) Adapter 	For installing camshaft oil seal
09950-70010 Handle set 	
(09951-07150) Handle 150	For installing camshaft oil seal and engine rear oil seal.

3

tool

plastic hammer 12101	Timing belt cover NN№ 2 for removal For crankshaft pulley installation
Deep socket wrench (14mm) 10203	``Exhaust front pipe removal and removal

instrument

caliper 20202	For inspecting cylinder head bolts

Oils and fats/others

bolt 90105-14097 54840	Crankshaft pulley and crankshaft For removing the foot timing pulley
Toyota genuine MP grease No.2 30204	For oil seal lip application
Sandpaper (#400) 50801	For crankshaft modification
Toyota genuine long life coolant 32001	For replenishment
paint 51102	For cylinder head bolt mark
cutter knife 50601	For crankshaft oil seal removal
vinyl table 53702	Crankshaft oil seal and engine For protection when removing rear oil seal
plastic hammer 12101	For crankshaft booley installation

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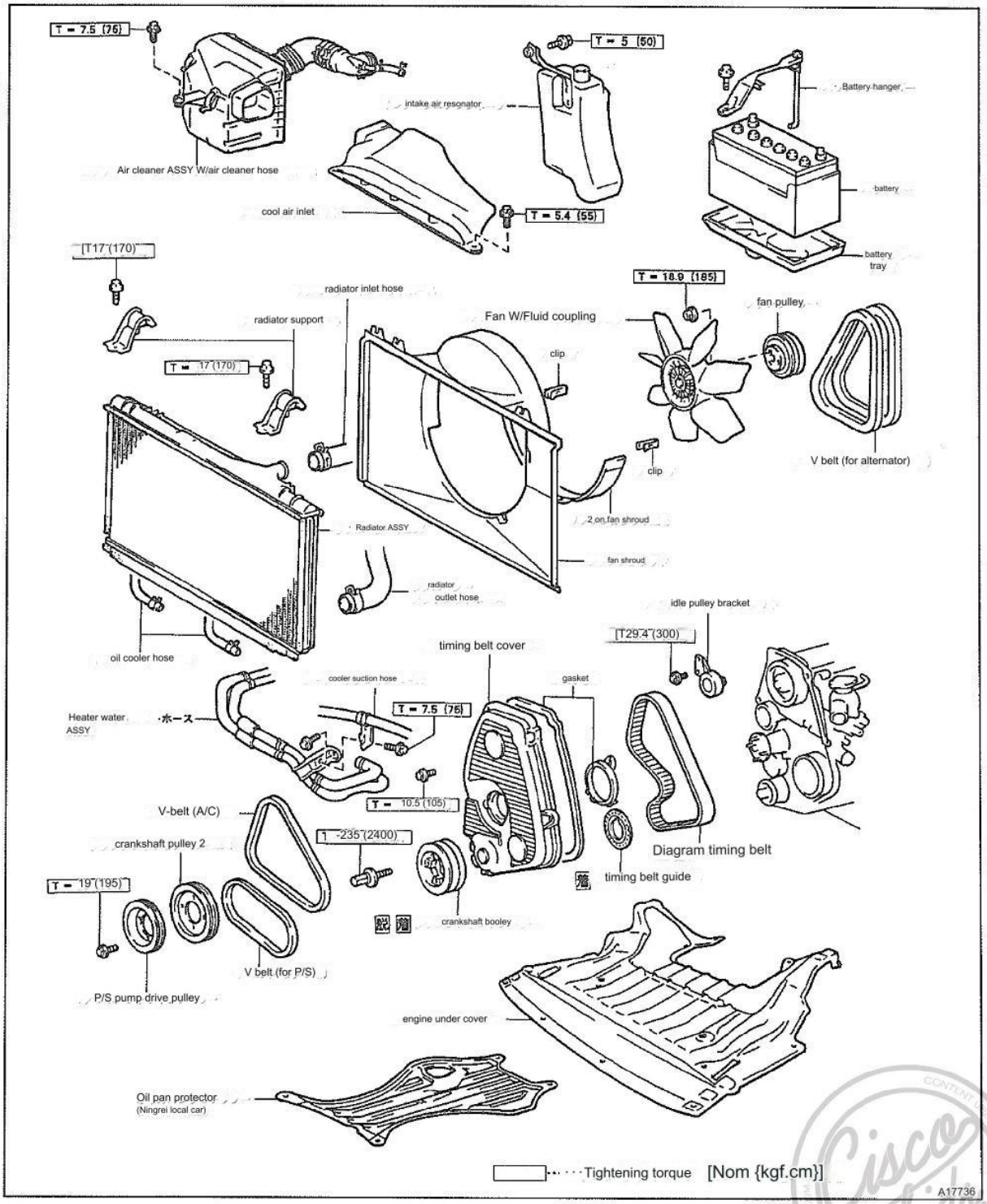
TD043904

Timing belt

Detachment configuration diagram



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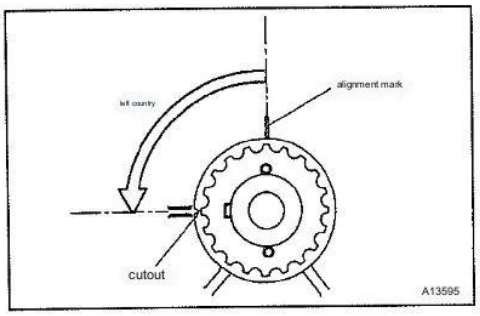

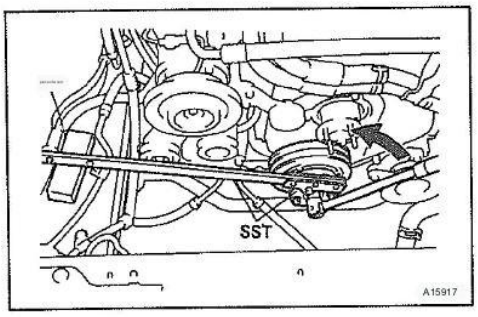

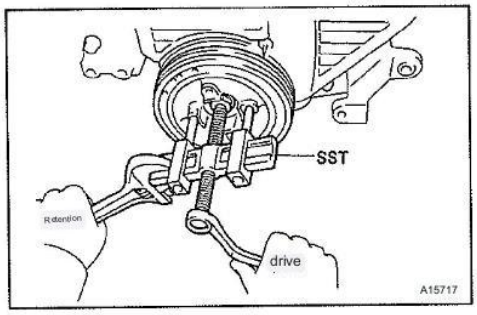

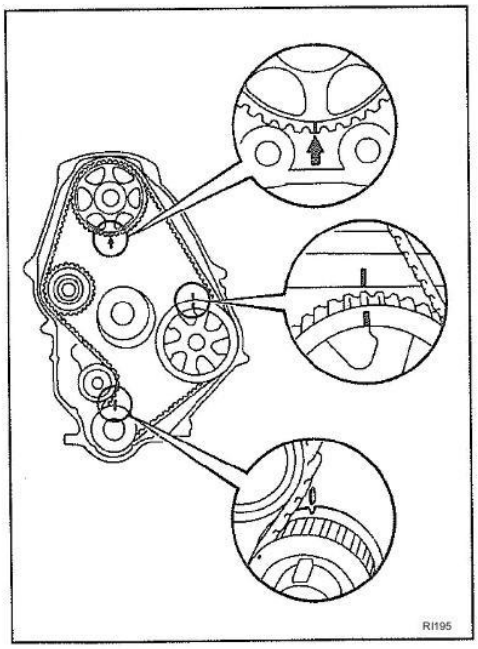

Precautions while working

1 Precautions when removing the timing belt

- Never rotate the crankshaft with the timing belt removed. (The piston and valve may interfere and cause damage.)
- When rotating the camshaft with the timing belt removed, rotate the crankshaft 90 degrees to the left and align the timing pulley notch with the position shown in the illustration.

When installing the timing belt, be sure to return the camshaft to the alignment mark position, then rotate the crankshaft clockwise to return it to its original position.

(Reference) By positioning the No. 1 cylinder 90 degrees before top dead center, it prevents interference with the piston even when the valve is fully open.

Points to note during removal work

1 Remove crankshaft pulley

(1) Using SST, remove the crankshaft pulley bolt.

S S T 09213-54015 09330-00021 91651-60855

(2) Attach the prepared bolt (90105-14097: M14×P 1.5) to the crankshaft.

<Reference> Screw the bolt (90105-14097) into the crankshaft about 8 to 10 threads.

(3) Remove the crankshaft pulley using SST.

S S T 09951-05010 09952-05010 09953-05020 09954-05020

Apply oil to the threaded part and tip of Center Bolt 150 before use.

2 No.1 cylinder compression top dead center set

(1) Before removing the timing belt, set No. 1 cylinder to compression top dead center.

3 Removing the timing belt

(1) Mark the rotation direction on the back of the timing belt with chalk, etc., and then remove the timing belt.

Inspection before timing belt installation

1 Timing belt idler No.1 and No.2 inspection

(1) Rotate the pulley by hand and check that it rotates smoothly.

(2) Check that grease is not scattered on the seal.

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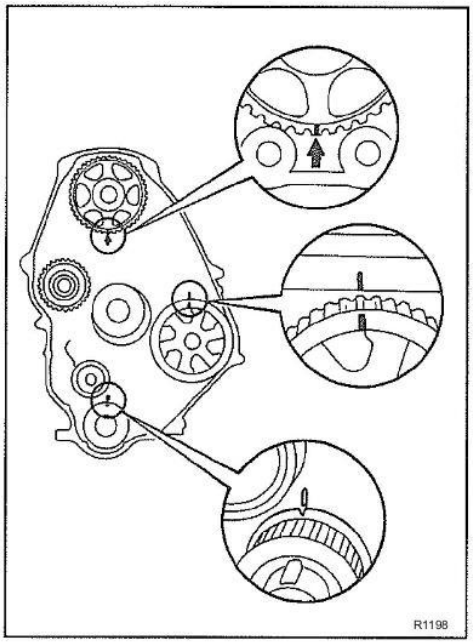


Points to note during installation work

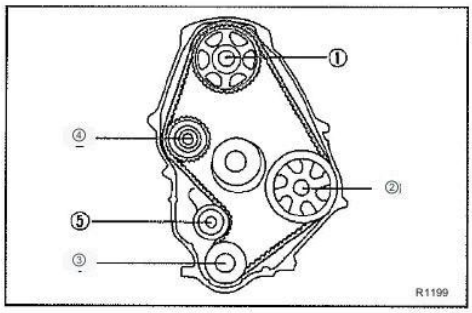
- If water or oil is found on the timing belt or pulleys, repair the leakage or infiltration area and install a new timing belt.
- Before installing each pulley, be sure to wipe off any dirt with a rag. (Do not wash)

1 Installing the timing belt

(1) Align the alignment marks on each timing pulley.

camshaft timing booley	↔	Timing belt Cover №2 arrow
injection pump drive pulley	↔	Timing belt case protrusion
crankshaft timing pulley	↔	Timing belt case protrusion

JA0541



(2) Check the rotation direction and attach the timing belt to each pulley in the order shown in the diagram.

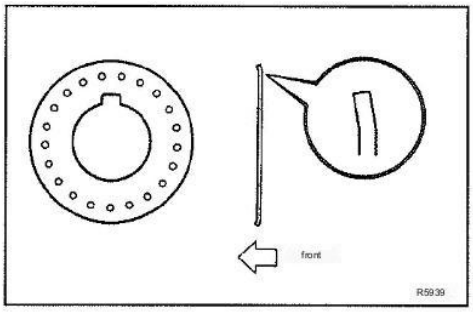
Hold the injection pump drive pulley until the timing belt is attached to prevent the alignment marks from shifting.

(3) Install the tension spring.

(4) Rotate the crankshaft twice in the forward rotation direction to bring No. 1 cylinder to compression top dead center, and check that the alignment marks on each pulley are aligned.

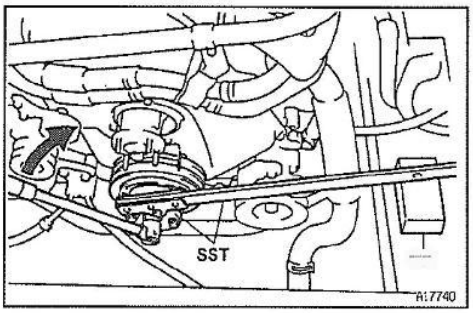
CAUTION: Never reverse the timing belt as it may cause the timing belt to skip teeth.

(5) Tighten timing belt idler No.1.



2 Installing the timing belt guide

Attach the belt guide in the direction shown in the illustration.



3 Crankshaft booley installation

- Insert the bolt with the crankshaft boley fixed with SST. tighten.

S S T	09213-54015 09330-00021	91651-60855
<reference>	When attaching the pulley to the shaft, if the engagement is tight Use a plastic hammer.	

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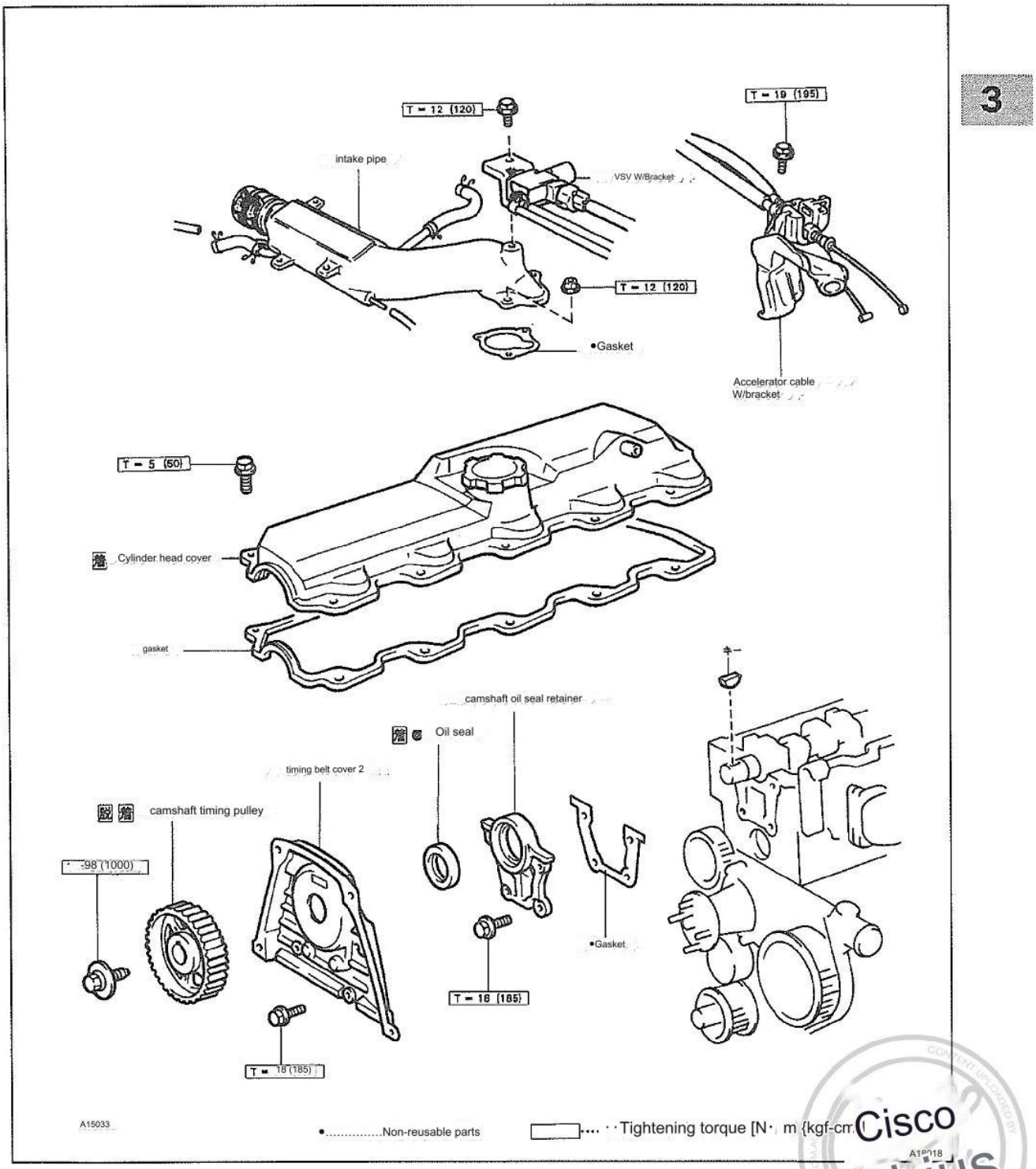
T0048B0S

camshaft oil seal

Detachment configuration diagram



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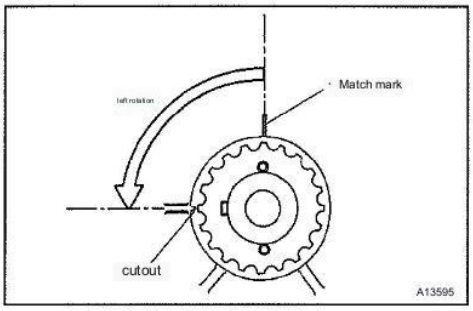


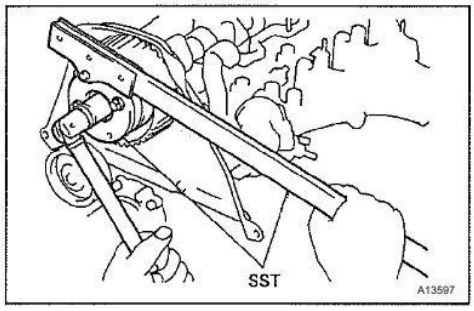
Points to note during attachment/detachment work

Before removing the camshaft timing pulley, be sure to rotate the crankshaft timing pulley 90 degrees counterclockwise from the No. 1 cylinder compression top dead center position.

<Reference> By positioning the No. 1 cylinder 90 degrees before top dead center, it prevents interference with the piston even when the valve is fully open.

1 Removal and installation

of the timing belt (see "Engine body" - "Timing belt")



2 Camshaft timing pulley removal and removal

Before removing the camshaft timing pulley, make sure that the notch on the crankshaft timing pulley is in the position shown in the upper left diagram.

- Attach and remove bolts with the pulley fixed with SST.

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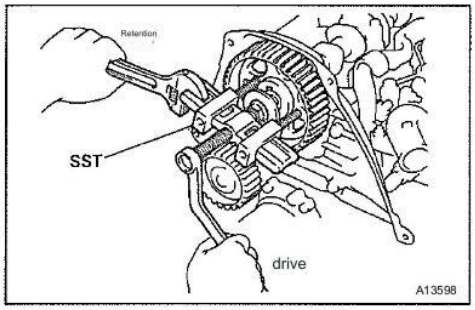
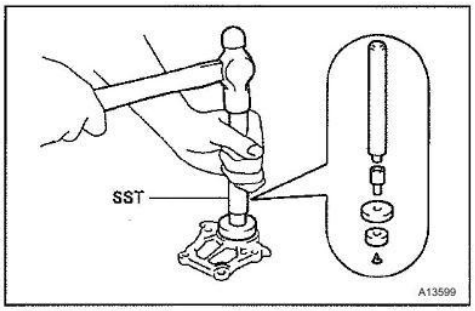


- When removing the camshaft timing pulley, screw the pulley bolt into the camshaft about 5 to 6 threads and remove using SST.

S S T 09551-05010 09952-05010 09953-05010 09954-05020

Caution Apply oil to the threaded part and tip of Center Bolt 100 before use.



3 Camshaft oil seal installation

(1) Use a new oil seal.

(2) Apply a small amount of MP grease No. 2 all around the lip of the oil seal.

(3) Using SST, drive in the oil seal so that it is flush with the end face of the retainer.

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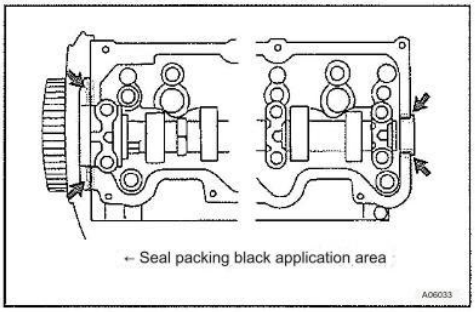

4 Installing the cylinder head cover

(1) Degrease the areas shown in the figure.

(2) Apply seal packing black to the locations shown in the figure, and apply gas within 5 minutes.

Install the cylinder head cover through the bracket.

(3) Tighten the cylinder head cover with 2 nuts and 8 bolts.

wear.

Note Do not start the engine for 2 hours after installation.

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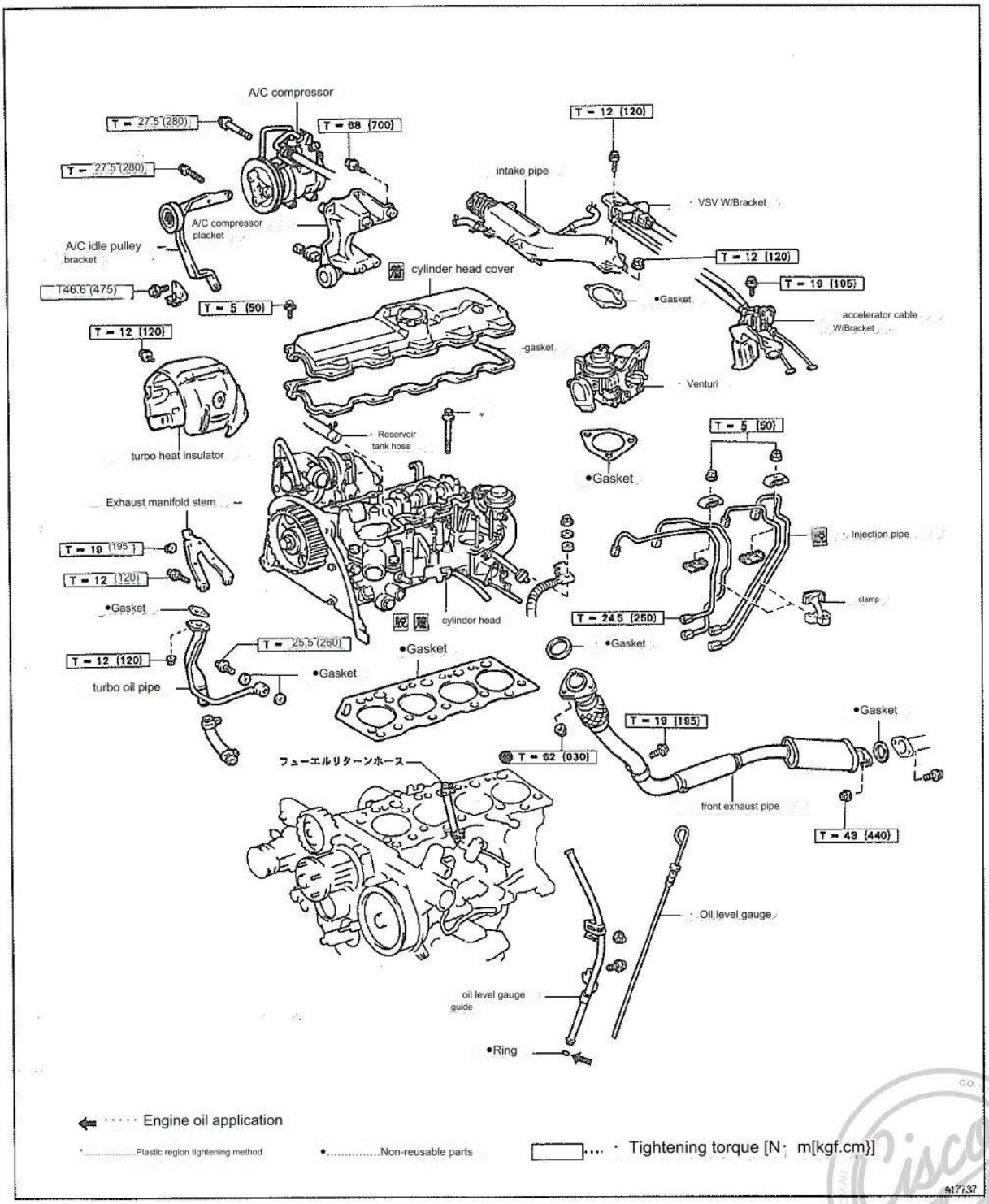
TD04B0GB

cylinder head gasket

Detachment configuration diagram



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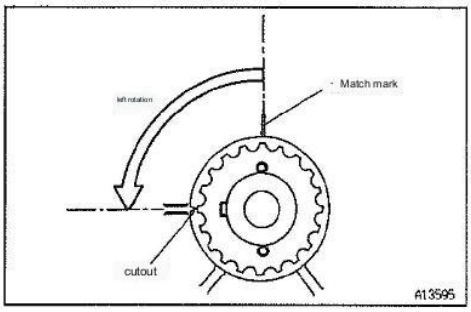

3

Cylinder head gasket removal

NOTE: Before removing the cylinder head, be sure to rotate the crankshaft timing pulley 90 degrees counterclockwise from the No. 1 cylinder compression top dead center position.

<Reference> By positioning the Na 1 cylinder 90 degrees before top dead center, it is prevented from interfering with the piston even when the valve is fully open.

1 Remove timing belt

(Refer to "Engine body" - "Timing belt")

2 Front exhaust pipe removal

3 Accelerator cable W/bracket removal

4 Intake pipe and venturi removal

5 Disconnect the fuel return hose

6 Disconnect wire harness and connector

(1) Disconnect the water tempera chasender gauge connector.

(2) Disconnect the water temperature sensor connector.

(3) Remove the nut, washer and collar, and disconnect the glow plug connector terminal.

(4) Remove the wire harness clamp and disconnect the wire harness from the cylinder head and intake manifold.

7 Injection pipe removal

(1) Remove the two nuts and remove the two clamps.

(2) ④Use a screwdriver to remove the two clamps.

(3) Loosen the four flare nuts on the nozzle side of the injection pipe.

(4) Fix the injection pump union with a wrench, loosen the four flare nuts on the pump side, and remove the injection pipe.

8 Oil level gauge guide and oil level gauge removal

Sushi

9 Disconnecting the radiator reserve tank hose

10 Heater water hose ASSY removal

11 A/C idler pulley bracket and A/C compressor Sir removal

NOTE: Do not disconnect the A/C hose.

12 A/C compressor bracket removal

13 Turbo heat insulator removal

14 Turbo oil pipe removal

(1) Remove the turbo oil outlet hose.

(2) Remove the 2 nuts and 2 ports, and remove the exhaust manifold. Remove the rod stay.

(3) Remove the union bolt and gasket from the turbo oil inlet side pipe.

(4) Remove the two nuts and remove the turbo oil pipe and gasket.

15 Removing the cylinder head cover

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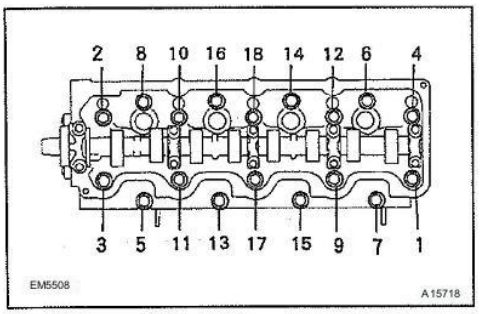
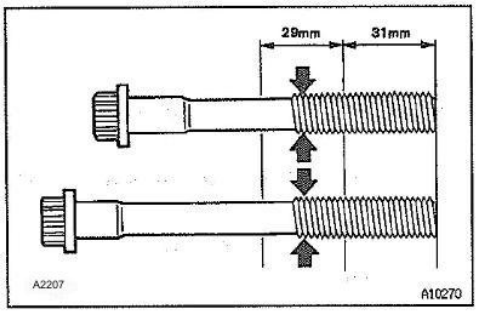


16 Cylinder head removal

(1) Loosen the cylinder head bolts in 2 to 3 steps, approximately 90 degrees in the order shown in the diagram, and remove the cylinder head.

(2) Remove the cylinder head gasket.



Points to note during installation work

NOTE Before installing the cylinder head, check that the notch on the crankshaft timing pulley is positioned 90° before top dead center.

1 Inspection before installing cylinder head bolts

- Measure the outer diameter of the cylinder head bolt at the position shown in the diagram with a caliper.

Standard height 12.00mm

Limit 11.60mm

If it is below the limit, replace the cylinder head bolt.

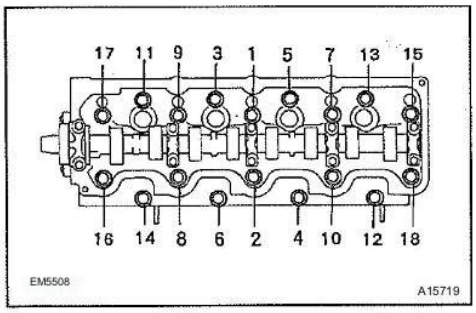
2 Cylinder head installation

(1) Apply a small amount of engine oil to the threaded part of the bolt, the seat surface, and the washer, and attach it to the cylinder head.

(2) After temporarily tightening the head bolts several times, tighten them to the specified torque.

T=78N•m {800kgf•cm}

NOTE Tighten the cylinder head bolts (2), (4), and (6) in the tightening order shown in the diagram.



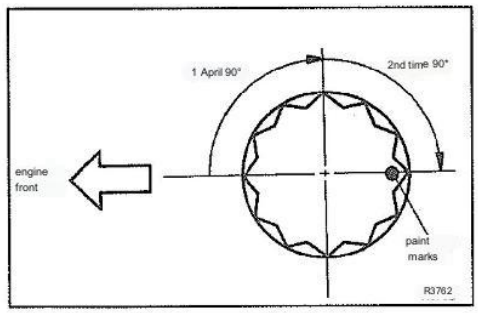
(3) Add a paint mark to the engine front side of the cylinder head bolt head.

(4) Tighten each head bolt 90° using the paint mark as a guide.

(5) Check that all paint marks are on the right side of the engine.

(6) Further tighten each head bolt by 90 degrees.

(7) Check that all paint marks are on the rear side of the engine.



3 Installing the cylinder head cover

(Refer to "Engine body" - "Camshaft oil seal" - "Notes on installation and removal work 4")

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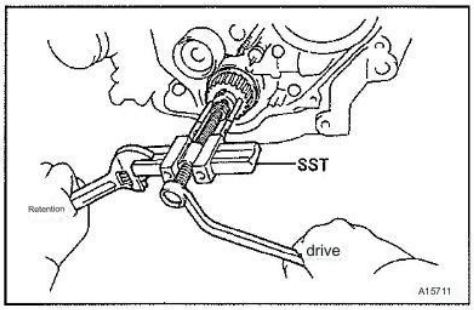


Crankshaft front oil seal

Points to note during attachment/detachment work

1 Timing belt removal and removal
(Refer to "Engine body" - "Timing belt")

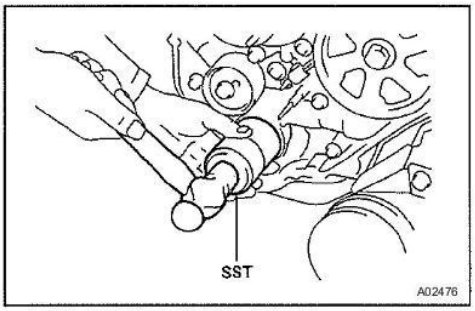
2 Removing the crankshaft timing pulley
(1) Attach the prepared bolt (90105-14097: M14×P 1.5) to the crankshaft.
(Reference) Screw the bolt (90105-14097) into the crankshaft about 8 to 10 threads.
(2) Using SST, remove the crankshaft timing pulley.

S S T 09951-05010 09952-05010 09553-05020 09954-05010

Note: Apply oil to the thread and tip of center bolt 150 before use.

3 Removing the crankshaft front oil seal
(1) Cut the lip part with a utility knife.
(2) Wrap vinyl tape around the screwdriver and pry off the oil seal.

After removing the oil seal, check that there are no scratches on the crankshaft chamfer. If there are any scratches, repair them with side paper (#400).



4 Installing the crankshaft front oil seal
(1) Apply a small amount of MP Grease No. 2 to the lip of the new oil seal.

Caution: Do not allow chips or dirt to adhere to the lip.

(2) Using SST, place the oil seal against the timing gear case.
Type until it appears.

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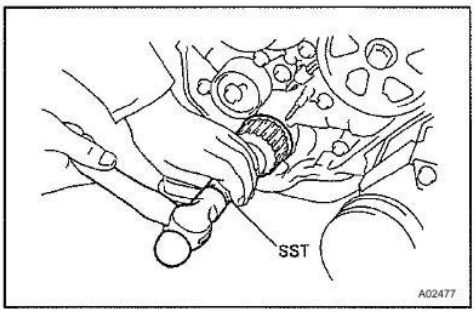

5 Installing the crankshaft timing pulley
· The crankshaft timing pulley is driven using SST.

It's crowded.

S S T 09223-50010

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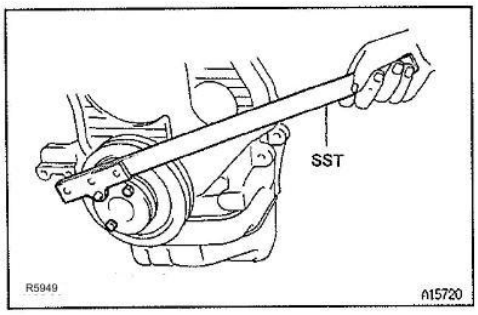
T0041900

engine rear oil seal

Points to note during attachment/detachment work

1 Automatic transmission removal
and removal (see "Automatic Transmission" and "Transmission ASSY")

3



2 Drive plate removal/removal
- Remove and install the drive plate set bolt while holding the crankshaft using SST.

S S T 09213-54015 09330-00021 91651-60855

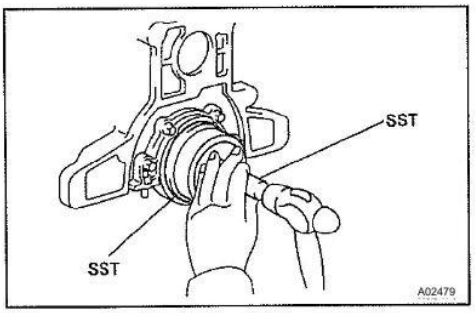
T=98N•m {1000kgf•cm}

3 Removal of rear oil seal

(1) Cut the lip with a utility knife.

(2) ⊖ Wrap vinyl tape around the driver and pry the oil seal off by applying a rag to the crankshaft.

After removing the oil seal, check that there are no scratches on the crankshaft chamfer. If there are any scratches, fix them with sandpaper (#400).



4 Rear oil seal installation

(1) Apply a small amount of MP grease No. 2 to the lip of the new oil seal.

(2) Using SST, drive the oil seal until it is flush with the end face of the retainer.

S S T 09223-15030 09951-07150

(3) Wipe off the grease adhering to the crankshaft.

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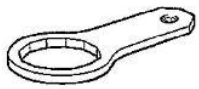
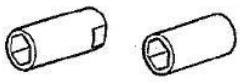
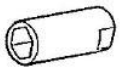
T0348000

fuel

Preparation items

SST

	09228-64030	fuel filter wrench	For fuel filter removal
	09268-64010	Injection nozzle wrench set	
	(09268-64020)	Injection nozzle holder retaining nut wrench	Injection nozzle removal and removal

tool

	09130-00150	Water pump pliers	For level warning switch removal

instrument

	09082-00012	toyota electrical tester	For inspection of each part
	TB-501 HVP-1	mighty back Treated as Banzai Co., Ltd. Treated as Iyasaka Co., Ltd.	For fuel heater inspection

Oils and fats/others

Light oil 32205		For fuel filter element installation

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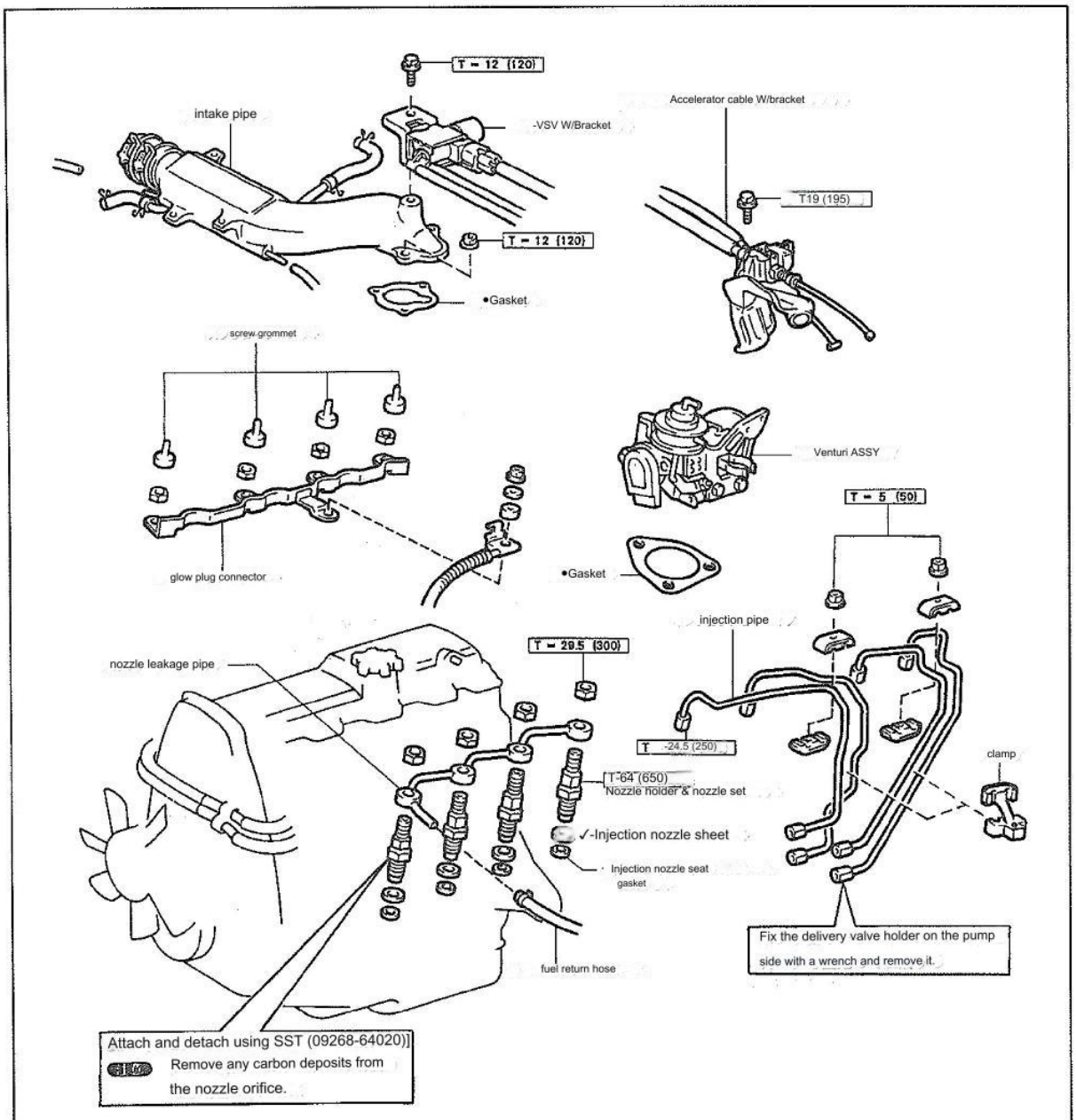
T0048810

Injection nozzle holder and nozzle set

Detachment configuration diagram



•.....Non-reusable parts ▭.... · Tightening torque [N · m {kgf · cm}]

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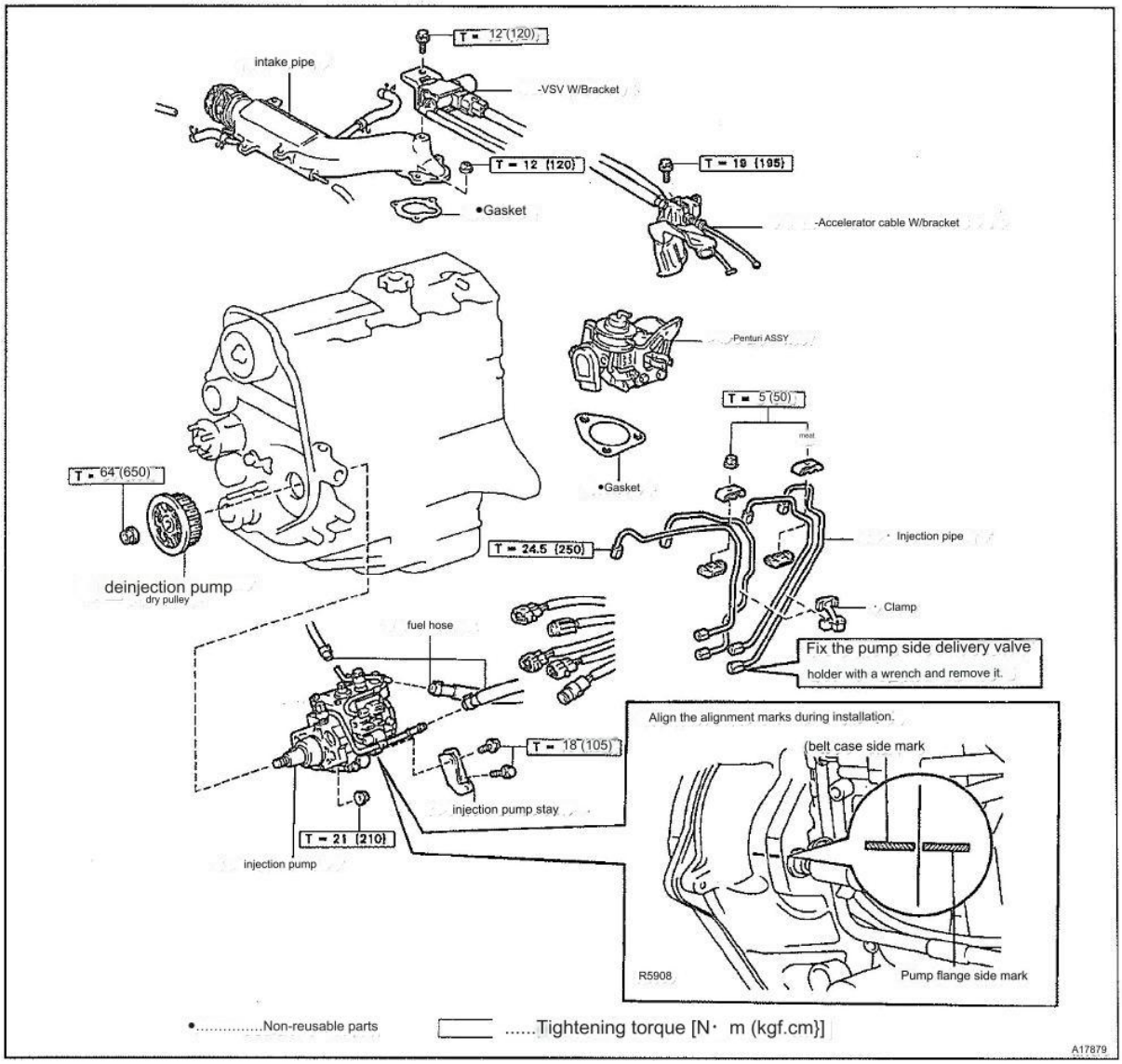
T004891

injection pump

Detachment configuration diagram



Points to note during attachment/detachment work

1 Timing belt removal and removal

(Refer to "Engine body" - "Timing belt")

2 Removing the injection pump drive pulley

(Refer to "Engine ASSY" - "Partial engine" - "Notes on disassembly work 4")

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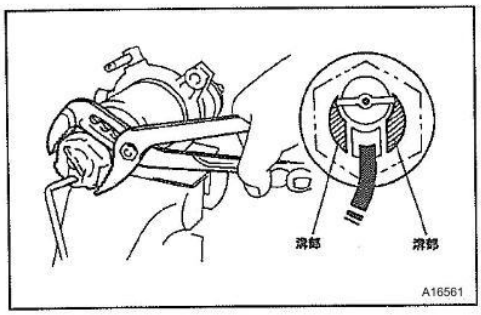

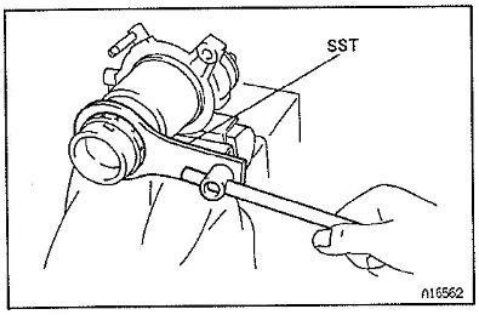

T004912

fuel filter element

Points to note during attachment/detachment work

1 Level warning switch removal/removal

- To remove the level warning switch, hold the fuel filter cap between the piers and use water pump pliers.

注意 Pinch the groove shown in the diagram with water pump pliers to release the switch. It will break, so pinch the hexagonal part and turn it.

- Tighten the level warning switch fully by hand using a new O-ring.

2 Fuel filter element removal and installation

- Use SST to remove the fuel filter element.

S S T 09228-64030

- To install the fuel filter element, apply a small amount of light oil to the gasket, and after the gasket touches the mounting surface, tighten it as hard as you can by hand about 3/4 turn.

注意 · Fuel filter element cannot be reused.·
Do not tighten using SST.

- After removing the fuel filter element, attach the fuel filter cap to the vehicle and operate the priming pump to fill the element with light oil.

T=17.5N·m {175kgf·cm}

T0045913

fuel tank

(See "1G-FE Engine," "EFI System," and "Fuel Tank.")

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T0045914

Individual inspection

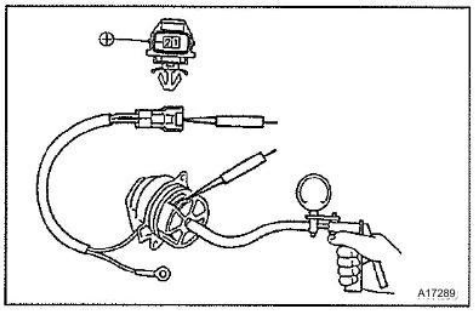
Fuel level warning switch

1 Continuity check

(1) Check continuity between terminals using a Toyota electrical tester.

Reference float top end position...with continuity

Float bottom end position...No continuity

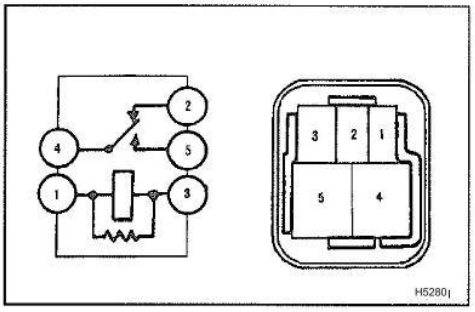


Fuel heater (cold region specification vehicle)

1 Resistance check

(1) Connect the Toyota Electrical Tester between the connector terminal and the body.

(2) Apply negative pressure of 27~40kPa (200~300mmHg) to the vacuum switch using Mighty Bag and measure the resistance. Standard value 0.5~1.50



Fuel heater relay (cold region specification vehicles)

1 Resistance and continuity check

(1) Measure the resistance between each terminal using a Toyota electrical tester.

Standard value Between 13 terminals 50~900 24 There is continuity between terminals 45

There is no continuity between terminals

(2) When applying battery voltage between terminals 13, check for continuity between terminals 24 and 45.

Standard No continuity between 24 terminals

Continuity between 45 terminals

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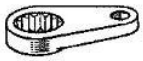
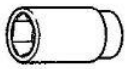
YDG48815

Lubrication

Preparation items

S S T

	09228-10002	oil filter wrench	Oil filter removal
	09326-20011	Output shaft bearing lock nut wrench	Union (for oil filter) removal/removal
	09816-30010	oil pressure switch socket	Oil pressure switch removal and removal

instrument

	OPG-210 ATG-100	Automatic transmission oil pressure gauge set Available from Banzai Co., Ltd. Available from Iyasaka Co., Ltd.	For oil pressure measurement
	(OPG-230) (ATG-OP20)	Adapter D handled by Banzai Co., Ltd. Treated as Iyasaka Co., Ltd.	For oil pressure measurement

tool

	09032-00100	Oil pan seal cutter	For oil pan removal
	09090-04020	Engine sling device	For engine suspension
Deep socket wrench (14mm)	10203		Front exhaust pipe removal and removal
plastic hammer	12101		For removing timing belt cover NN№2 For removing oil cooler

Oils and fats/others

Adhesive 1324	50401	For oil pressure switch thread application
Toyota genuine engine oil	32103	For replenishment
Toyota genuine long life coolant	32001	For supplementary fill
Seal packing black	50902	For application when installing oil pan

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T0048B16

Functional check

oil pressure check

Reference value

engine rotation	Oil pressure [kPa {kgf/cm²}]
At idle rotation	29.5~196 (0.3~2.0}
Hold at 3000r/min	245~588 (2.5~6.0)

Main points

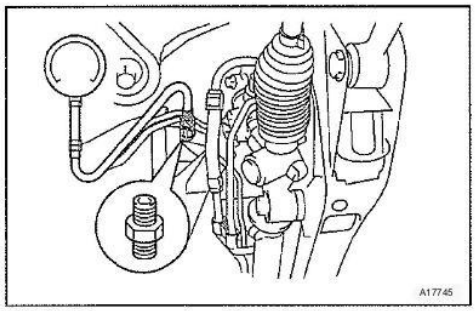
1 Oil inspection

2 Removal of oil pan protector (cold region specification vehicles) and engine under cover

3 Removing the front exhaust pipe

4 Oil pressure switch removal SST

09816-30010



5 Installing the oil pressure gauge

(1) Attach the oil pressure gauge via the adapter.

6 Front exhaust pipe installation

7 Warm up the engine

8 Oil pressure measurement

9 Front exhaust pipe removal

10 Oil pressure gauge removal

11 Oil pressure switch installation

(1) Remove and install the threaded part of the oil pressure switch.

(2) Apply Adhesive 1324 to the threaded part of the oil pressure switch.

SST 09816-30010

T-20.0Nm (200kgf.cm)

CAUTION Do not start the engine for one hour after installation.

(3) Connect the connector.

12 Front exhaust pipe installation

T-62N.m {630kgf.cm)

(Turbine outlet elbow side: non-reusable parts)

T=43N-m {440kgf· cm) (Center pipe side)

13 Installing the engine under cover and oil pan protector (cold region specification vehicles)

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Oil filter & union (for oil filter)

Points to note during attachment/detachment work

1 Oil filter removal and removal

(1) Remove the oil filter using SST. SST

09228-10002

(2) Remove dirt and foreign objects from the mounting surface on the engine side.

(3) Apply a small amount of engine oil to the O-ring of the new oil filter.

(4) ○Install by hand until the ring touches the mounting surface.

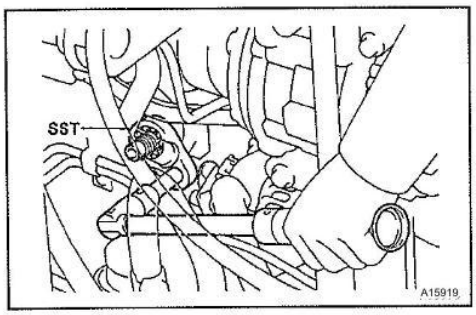
(5) Tighten an additional 3/4 turn using SST.

2 Attaching and detaching the oil filter union - Attach and detach the union using SST.

SST 09326-20011

T=49.0N.m (500kgf· cm) (Specified tightening torque)

T'=43.1N-m 440kgf· cm) (Reading when using torque wrench 920F)



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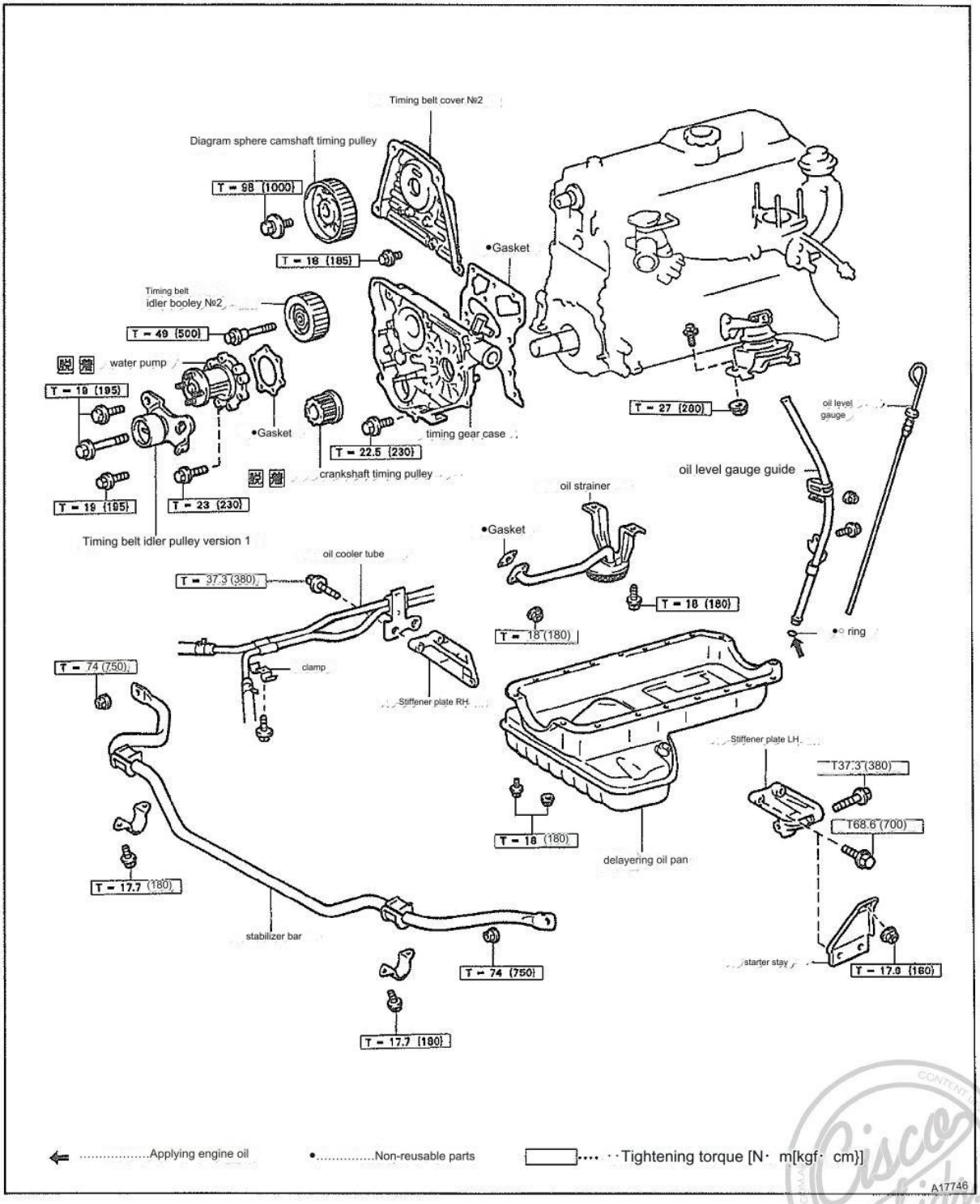
T0048818

timing gear case

Detachment configuration diagram



⇐ .....Applying engine oil •.....Non-reusable parts □.... ··Tightening torque [N· m[kgf· cm}]

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Points to note during attachment/detachment work

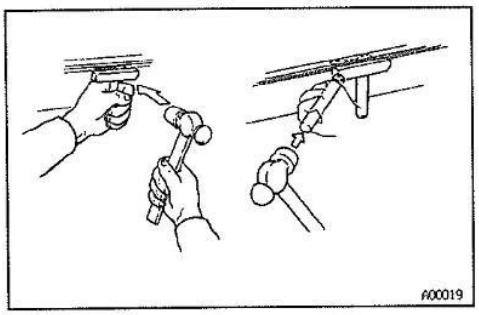
1 Injection pump removal/
removal (see "Fuel" ~ "Injection pump")

2 Camshaft timing pulley installation/
removal ("Engine body" "Camshaft oil seal")

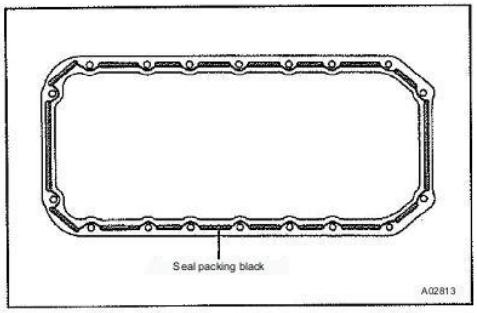
*Points to keep in mind when attaching and detaching work 2")

3 Removing the crankshaft timing
pulley ("Engine body" - "Crankshaft front oil seal"

-Refer to "Notes on attaching and detaching work 2")



4 Removing the oil pan
(1) Remove the 4 bolts and 4 nuts, and separate the engine mounting.
(2) Attach the engine sling device to the engine hanger and raise the engine 5 to 6 cm.
(3) Remove 16 bolts and 2 nuts.
(4) Remove the oil pan from the cylinder block using an oil pan seal cutter.



5 Installing the oil pan
· Continuously apply seal packing black in a bead (4~5mm) at the location shown in the diagram, then install the oil pan.

注意
· Degrease each mounting surface.
· Attach within 5 minutes after applying the seal packing.
· Do not inject engine oil within 2 hours after assembly.
place

6 Crankshaft timing pulley installation
("Engine body" "Crankshaft front oil seal")

-Refer to "Points to note when attaching and detaching work 5")

7 Water pump ASSY installation
(see "Cooling" and "Water pump")

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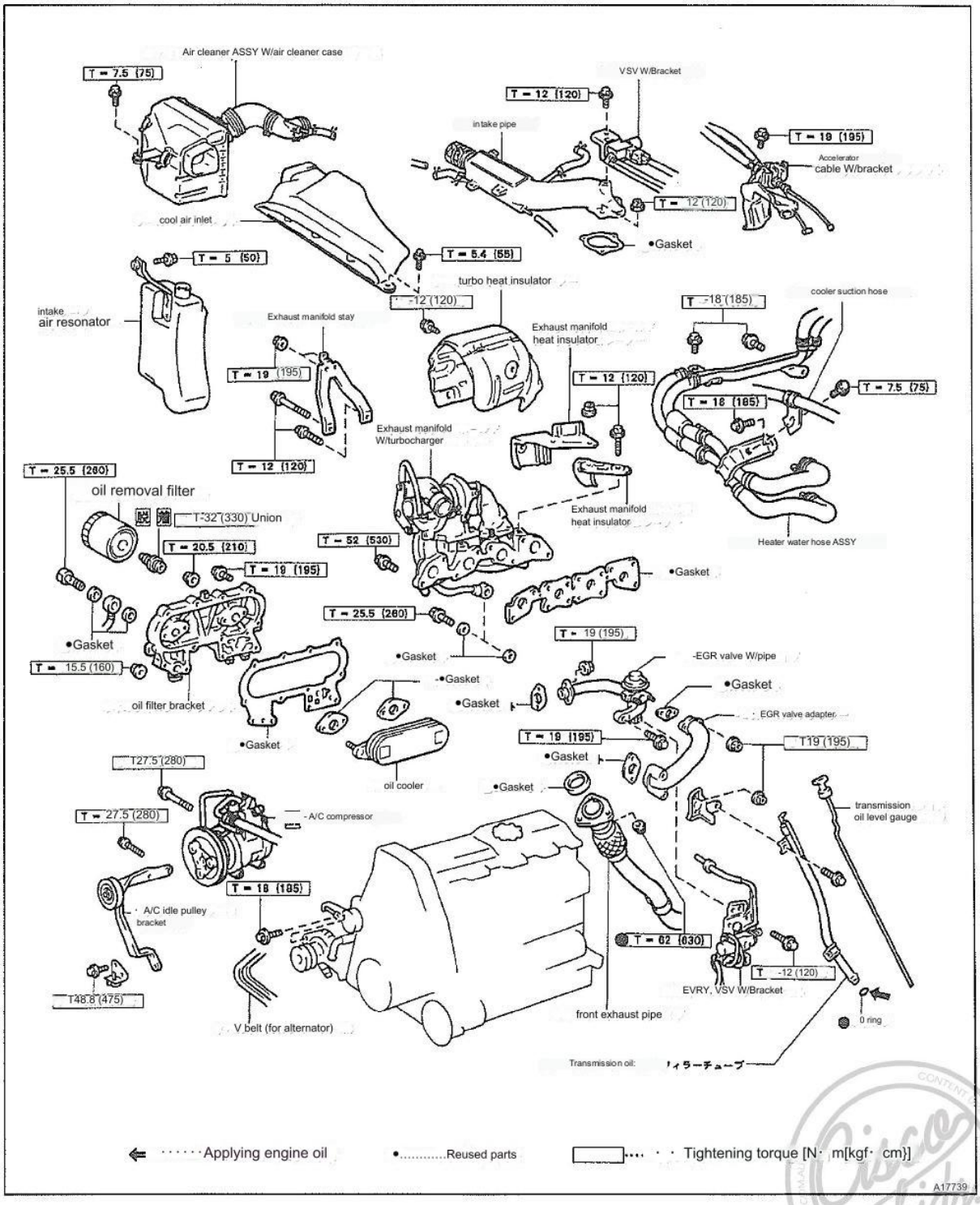
Y0042818

oil cooler

Detachment configuration diagram



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Points to note during attachment/detachment work

1 Removing the A/C idle pulley bracket and A/C compressor -

Do not disconnect the cooler hose.· Hang the A/C compressor using wire, etc.

2 Oil filter removal

("Lubrication"

- See "Oil filter & union (for oil filter)")

3

3 Remove the alternator fixing bolts

(1) Remove the two V-belts from the alternator pulley and slide the alternator towards the outside of the vehicle.

4 Removing and installing the oil filter union (see

"Lubrication" - "Oil filter & union (for oil filter)")

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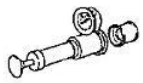
T0048018

cooling

Preparation items

instrument

	RCT-2A RCT-2	Radiator cap tester handled by Banzai Co., Ltd. handled by Iyasaka Co., Ltd.	"For checking water leaks and radiator caps"
	RCT-2A-30S RCT-2-AST	Radiator Cap Tester Adapter Set A Banzai treatment Katsuiyasaka treatment	For checking water leaks and radiator caps

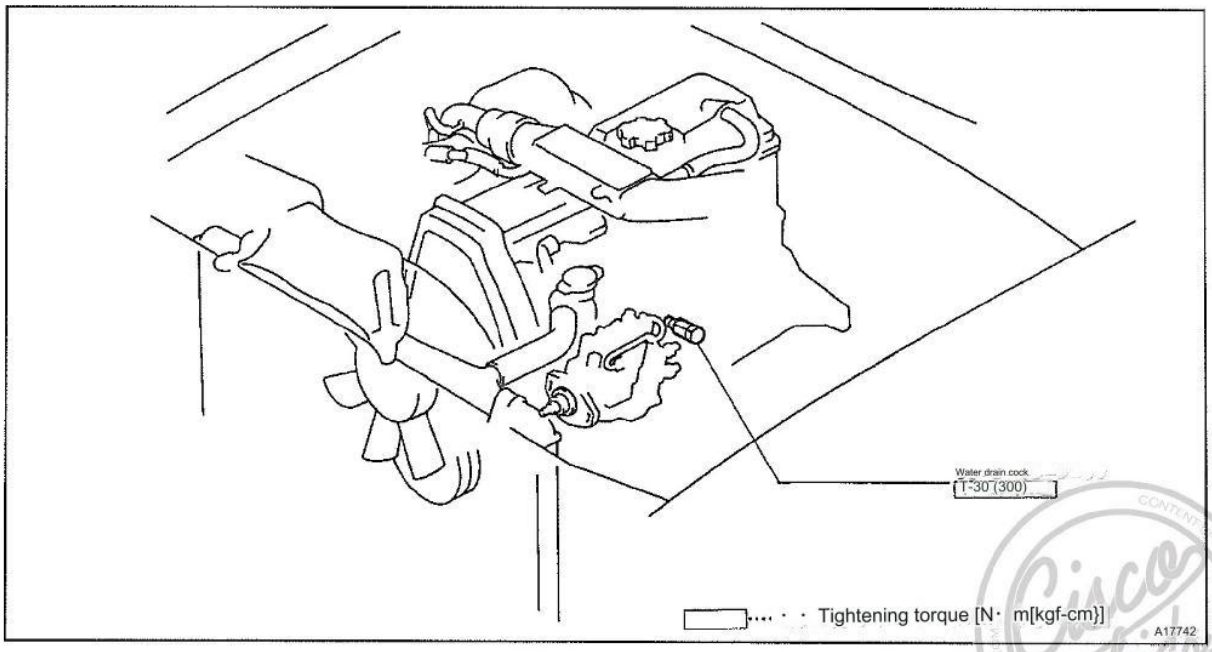
Oils and fats/others

temperature meter 21701	For thermostat inspection
straightedge 22101	For thermostat inspection
Toyota genuine long life coolant 32001	For replenishment

T0048061

Cooling water exchange

Drain the cooling water from the block side from the drain cock shown in the figure.



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T0048058

Functional check

Cooling system leak check

(1) Fill with cooling water and attach the tester.

(2) Apply a pressure of 118kPa (1.2kgf/cm²} and check that there is no water leakage from each part.

T004060

Points to note when installing and removing water pump

3

1 Removal and installation of the timing belt (see "Engine body" - "Timing belt")

2 Water pump installation

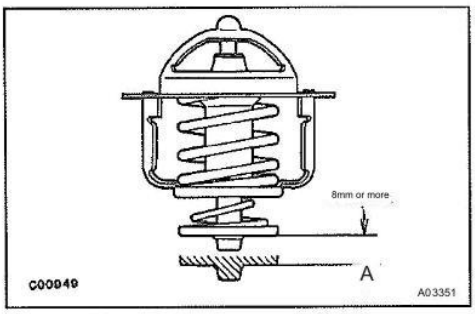
- Use a new gasket when installing the water pump.

T=22.5Nm (230kgf.cm)

T0048052

thermostat

Points to note during installation work



1 Thermostat installation

· Use a new gasket.

2 Water outlet installation

T-19Nm (195kgf.cm)

T0048063

Individual inspection

thermostat

1 Operation check

(1) Immerse the thermostat in water and gradually heat it up.

(2) Measure the temperature at which the valve begins to open and when it fully opens.

Standard value Opening temperature 86~90°C Temperature when fully opened 100°C

(3) Pull up the thermostat and quickly measure its fully open dimensions. Standard height 8 mm or more

radiator cap

1 Valve opening pressure check

(1) Use a tester to pressurize the radiator cap and check the valve opening pressure.

When attaching the cap to the tester, apply water to the seal of the cap.

Standard pressure 93~123kPa (0.95~1.25kgf/cm²)

Limit 78kPa (0.8kgf/cm²)

(2) Confirm that the pressure is maintained in the state of (1).

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T0048984

starting

Preparation items

instrument

	09082-00012	toyota electrical tester	For individual inspection

Oils and fats/others

Toyota genuine engine oil	32103	For A/T oil level gauge application

T0048985

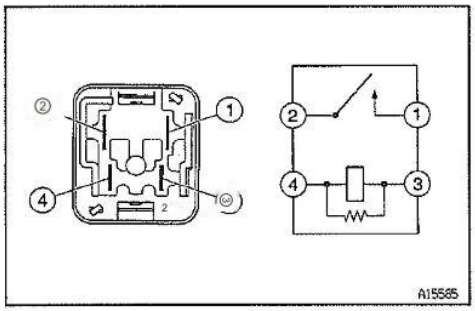
starter

Points to note during attachment/detachment work

Note: Be sure to remove the battery terminal before installing or removing the starter.

1 A/T oil level gauge and guide removal/
removal · When installing the A/T oil level gauge, use a new O-ring and apply engine oil.

2 Removing and installing the starter



T=21.1N-m (215kgf· cm) (Starter x Terminal)
T=39N-m (400kgf· cm) (Starter x Transmission)

T0048986

Individual inspection

starter relay

1 Resistance and continuity check

(1) Measure the resistance between each terminal using a Toyota electrical tester.

Reference value Between terminals 3↔4 60~1000 (20°C)

Between terminals 1 and 2 10MΩ or more

(2) When battery voltage is applied across terminals 34, check for continuity between terminals 12 and 12.

With reference continuity

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T0048007

charging

Do not disconnect the battery cable while the engine is running.

Preparation items

instrument

	09082-00012	toyota electrical tester	For alternator inspection

3

T0048008

Functional check

1 Battery specificity test standard

1.25~1.29 (liquid temperature 20°C)

2 Battery terminal inspection

3 Check V belt tension/deflection amount

(Refer to "Engine adjustment" ~ "Basic inspection")

4 Fuse check

5 Check wiring condition

6 Abnormal noise inspection

(1) Confirm that there is no abnormal noise from the alternator while the engine is running.

7 No-load test (adjusted voltage check)

(1) Increase the engine speed to 2000r/min and measure the voltage across the battery. Standard

value 13.2~14.8V (at 10A or less)

8 Load test (output current check)

(1) From the no-load test condition Immediately measure the current with the headlights set to high beam, the heater power switch set to Hi, and the engine speed set to 2000 r/min.

Standard value: 30A or more

<Reference> If the battery is fully charged even if the current is below the standard, the current will be small, so increase the load (activate the wiper motor defogger, etc.) and measure again.

T0048009

alternator

Points to note during attachment/detachment work

Be sure to disconnect the battery terminal before doing this.

1 Installing the vacuum pump oil inlet hose

· Use a new gasket.

T=25.5Nm (260kgf· cm) (Union bolt)

2 Alternator ASSY W/Vacuum pump installation

T=18N-m (185kgf.cm}

(Alternator x Idle pulley ASSY W/Bracket)

T=50N·m {510kgf·cm}

(Alternator x alternator bracket)

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T0045920

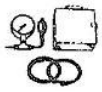
turbocharger

Preparation items

tool

Deep socket wrench (14mm) 10203		Exhaust front pipe removal and removal

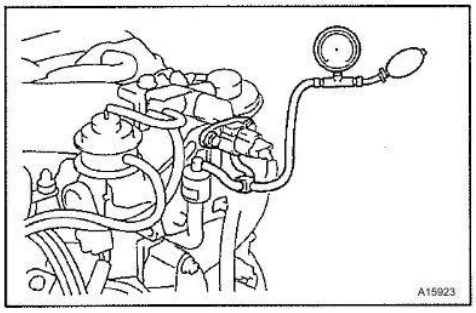
instrument

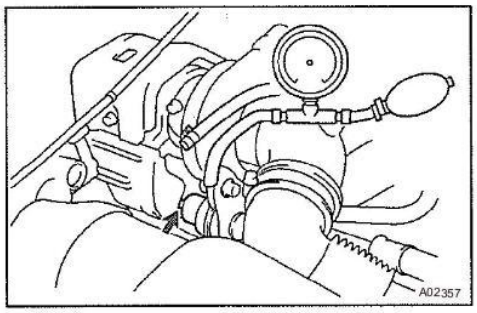
	09082-00012	toyota electrical tester	For inspection of each part
	TCP-2TB	turbocharger pressure gauge Treated as Banzai Co., Ltd.	For inspection of each part

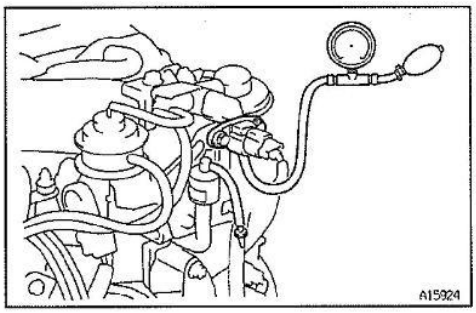
Oils and fats/others

Toyota genuine engine oil 32103	For replenishment

T0048821







Functional check

Turbocharger boost pressure

1 Operation check

(1) Using a turbocharger pressure gauge, apply pressure of approximately 111kPa (1.13kgf/caf} to the actuator and confirm that the rod moves.

NOTE Do not apply pressure greater than 136kPa (1.39kgf/cm²} to the actuator.

turbocharger actuator

1 Boost pressure check

(1) Install the turbocharger pressure gauge as shown in the diagram.

(2) Engine speed 2400r/min or higher, first gear (L range), throttle fully open, and measure boost pressure.

Standard value 53.3~88.3kPa (0.54~0.90kgf/cmf}

turbo warning

1 Warning lamp check

(1) Confirm that the check engine warning lamp is lit when the IG switch is turned on.

(2) Check engine warning lamp when starting the engine

Make sure that the light goes out.

(3) When idling, use the turbocharger pressure gauge. to pressurize the turbo pressure sensor (approximately 111kPa (1.13 kgf/cm²}), check that the lamp lights up.

NOTE After the inspection is complete, erase the memory of the diagnosis code.

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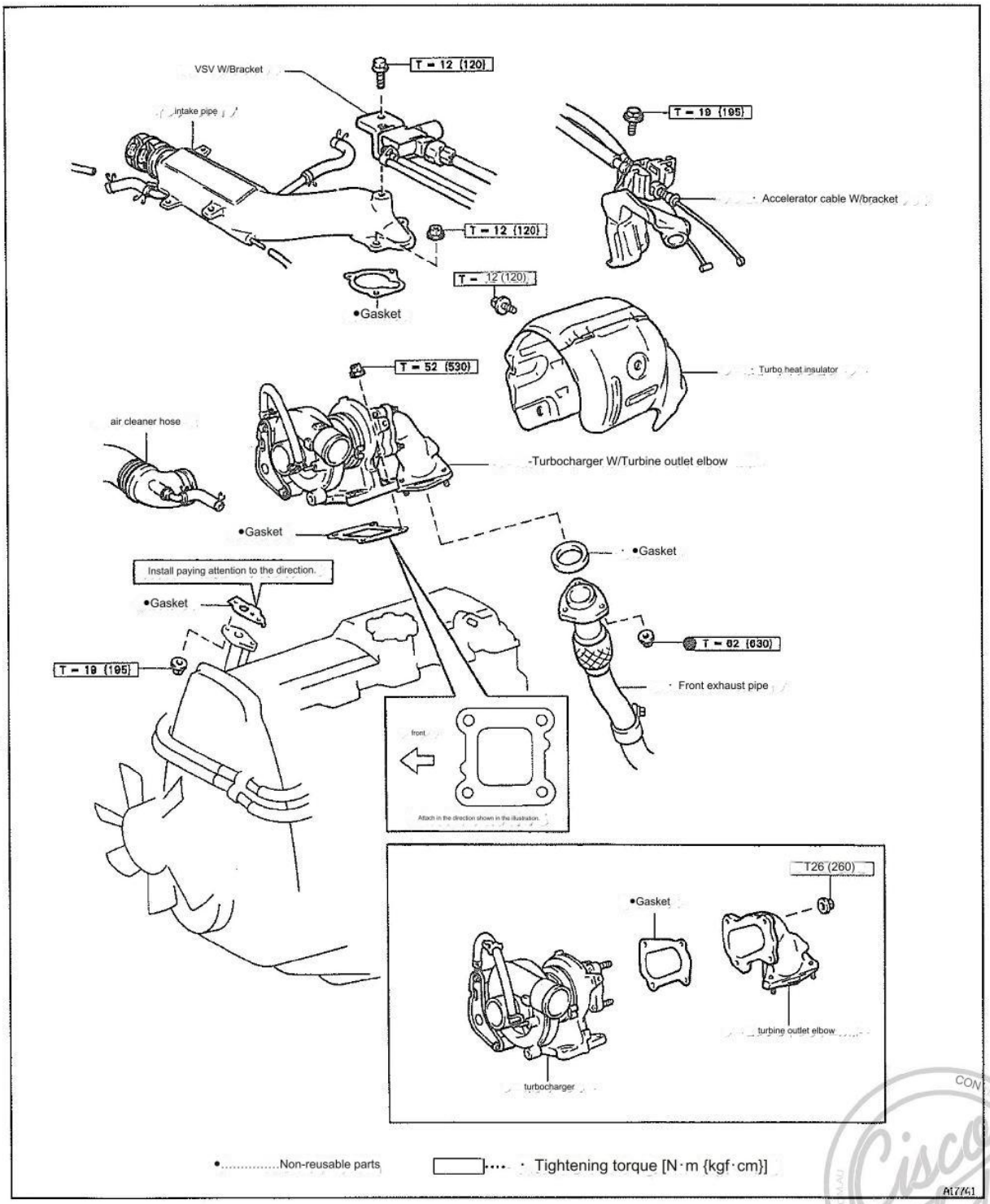
T0048022

turbocharger

Detachment and disassembly configuration diagram



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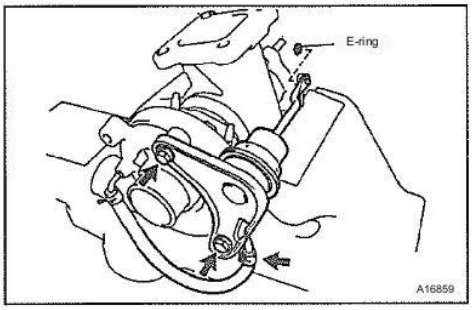
T0048023

turbocharger actuator

Turbocharger actuator replacement



CAUTION Do not apply pressure above 136kPa (1.39kgf/cm²) to the actuator.

1 Remove the turbocharger
(see "Turbocharger" and "Turbocharger")

2 Turbocharger actuator removal

(1) Disconnect the actuator hose at the location shown in the diagram.

(2) Using the turbocharger pressure gauge, move the actuator rod, remove the E-ring from the rod tip, and remove the rod from the link.

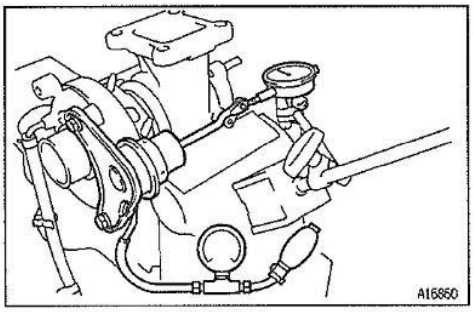
(3) Remove the two bolts and remove the actuator.

3 Turbocharger actuator installation

(1) Attach the actuator with two bolts.
T=19.1Nm {195kgf.cm}

(2) Using the turbocharger pressure gauge, move the actuator rod, fit the rod tip into the link hole of the waste gate valve, and install a new E-ring.

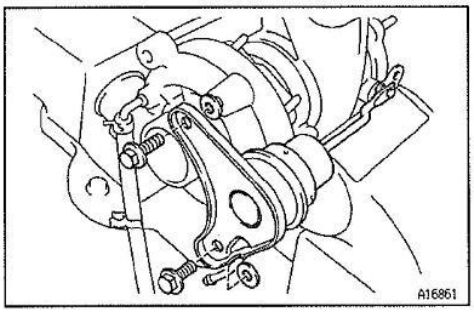
NOTICE Do not apply excessive force to the rod.



4 Turbocharger actuator rod stroke adjustment

(1) Set the dial gauge on the actuator.

(2) Using a turbocharger pressure gauge, measure the stroke of the actuator rod with a dial gauge when a pressure of 114kPa (1.16kgf/cm²) is applied to the actuator.



(3) Install a plate between the actuator bracket and the compressor housing so that the stroke measured in (2) is the reference value.

Select and install a washer.

Standard value 1.00~1.50mm

T=19.1N•m {195kgf•cm}

<Reference> Measured value of (2) and selected plate washer thickness

Measured value of (2) [mm]	plate to choose Washer thickness [23]	Measured value of (2) [m]	Select plate washer thickness [3]
1.00~1.50	無	4.51~5.00	3.5
1.51~2.00	0.5	5.01~5.50	4.0
2.01~2.50	1.0	5.51~6.00	4.5
2.51~3.00	1.5	6.01~6.50	5.0
3.01~3.50	2.0	6.51~7.00	5.5
3.51~4.00	2.5	7.01~7.50	6.0
4.01~4.50	3.0	7.51~8.00	6.5

JB1756

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NOTE
- Attach the selected plate washer by moving the actuator rod using the turbocharger pressure gauge. However, do not apply pressure higher than 136kPa (1.39kgf/ crf) to the actuator.
- Make the plate washers the same thickness in two places.
- Use a combination of 0.5mm, 1.0mm, 2.0mm, and 3.0mm plate washers.
- If the total thickness of the plate washer is 3.5mm or more, replace the actuator mounting bolt with the bolt included in the kit. (The bolt in the kit is 4mm longer)

(4) After installing the selected plate washer, use the turbocharger pressure gauge to apply a pressure of 114kPa {1.16kgf/ cm²} to the actuator and confirm that the stroke of the actuator rod is within the standard value.

Standard value 1.00mm~1.50mm

NOTE Round off to the third decimal place.

5 Turbocharger installation

(see "Turbocharger" and "Turbocharger")

6 Boost pressure

check (Refer to "Turbocharger" - "Functional check" → "Turbocharger - Boost pressure")

T0040924

Individual inspection

Turbo pressure sensor (Refer to "ECD System" - "Individual Inspection" and "Turbo Pressure Sensor Inspection")

engine control computer

("ECD system" "individual inspection"

- See "Engine control computer inspection")

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MEMO

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4 clutch

Clutch inspection and adjustment 4-2
Clutch inspection and adjustment 4-2
Clutch pedal 4-2
Preparation items 4-2
clutch pedal ..... 4 — 3
Detachable exploded configuration diagram ..... 4 — 3
Clutch master cylinder preparation ..... 4 — 4
parts ..... 4 — 4
clutch master cylinder ..... 4 — 5
Detachable configuration diagram ..... 4 — 5
Exploded configuration diagram ..... 4 — 6
clutch release cylinder ..... 4 — 7
Preparation items ..... 4 — 7
Clutch release cylinder 4-7
Detachable exploded configuration diagram ..... 4 — 7
Clutch ASSY 4-8
Preparation items 4-8
Clutch ASSY (vehicles equipped with 1G-FE) 4-9
Exploded configuration diagram 4-9
Points to note when removing the clutch ASSY 4-10
Inspection of clutch components 4-10
bearing replacement 4-10
Points to note when installing the clutch ASSY 4-11
Clutch ASSY (vehicles equipped with 1JZ-GTE) 4-12
Exploded configuration diagram 4-12
Points to note when removing the clutch ASSY 4-13
Inspection of clutch components 4-13
bearing replacement 4-13
Notes on clutch ASSY installation work 4-14

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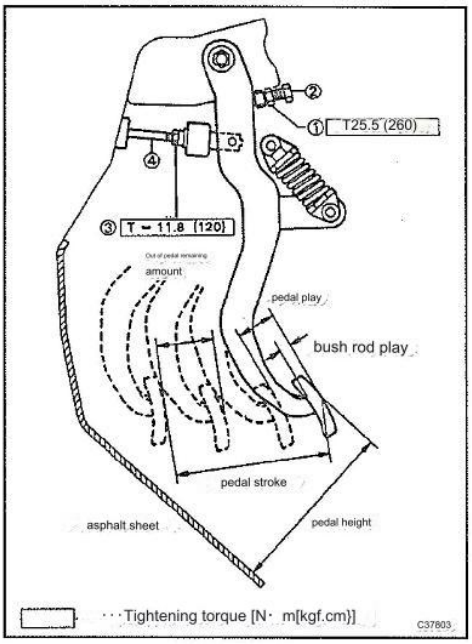

T0048463

Clutch inspection and adjustment

Clutch inspection and adjustment

Standard value list

	Standard value (mm)
pedal height	153~163
push rod play	1~5
pedal play	5~15
Pedal remaining amount	25 or more
pedal stroke	135~145

- Adjust the pedal height from the top of the asphalt sheet.
  - If the pedal height does not fall within the standard value, adjust in the order of ① → ② → ①.
  - Pedal play and bush rod play are within standard values.

  If not, measure in the order of ③→④→③. Also, check the pedal height after adjustment.

T0048464

clutch pedal

Preparation items

tool

	09023-00100	union nut wrench	For clutch tube disconnection and connection

Oils and fats/others

Toyota genuine MP grease No. 2 30204	For applying to each part
Toyota genuine brake fluid 2500H 32503	For clutch and brake air bleeding

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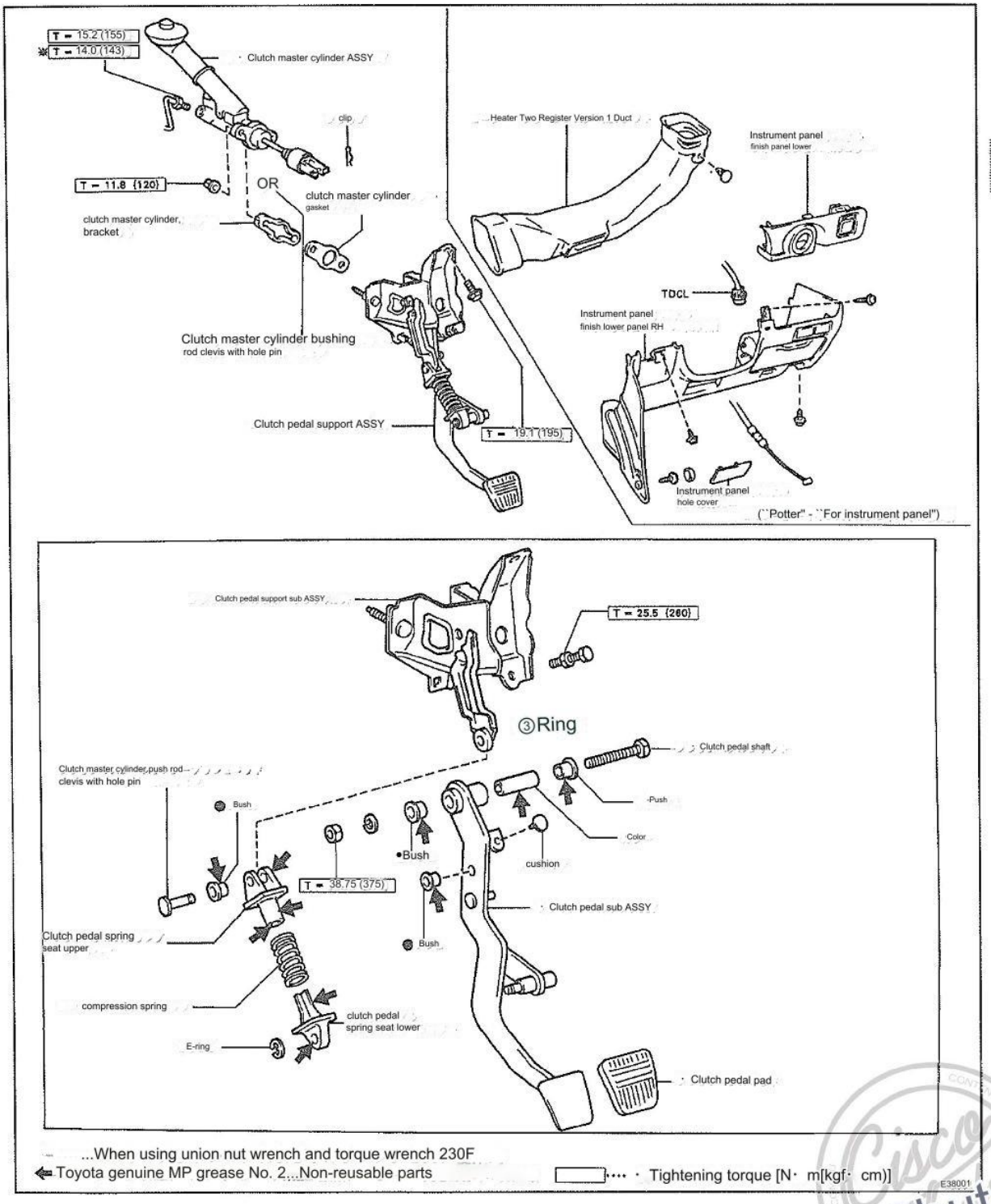
TQ0404B5

clutch pedal

Detachable exploded configuration diagram



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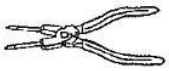
T0040450

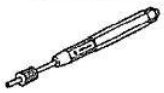
clutch master cylinder

Preparation items

S S T

	09905-00013 snap ring pliers	Hall snap ring removal and removal

tool

	09023-00100 Union nut wrench	For clutch tube disconnection and connection
	09031-00040 Pin punch (5)	Slotted spring pin removal/removal

Oils and fats/others

Toyota genuine rubber grease	30902	For applying to each part
Toyota genuine brake fluid 2500H	32503	For clutch and brake air removal

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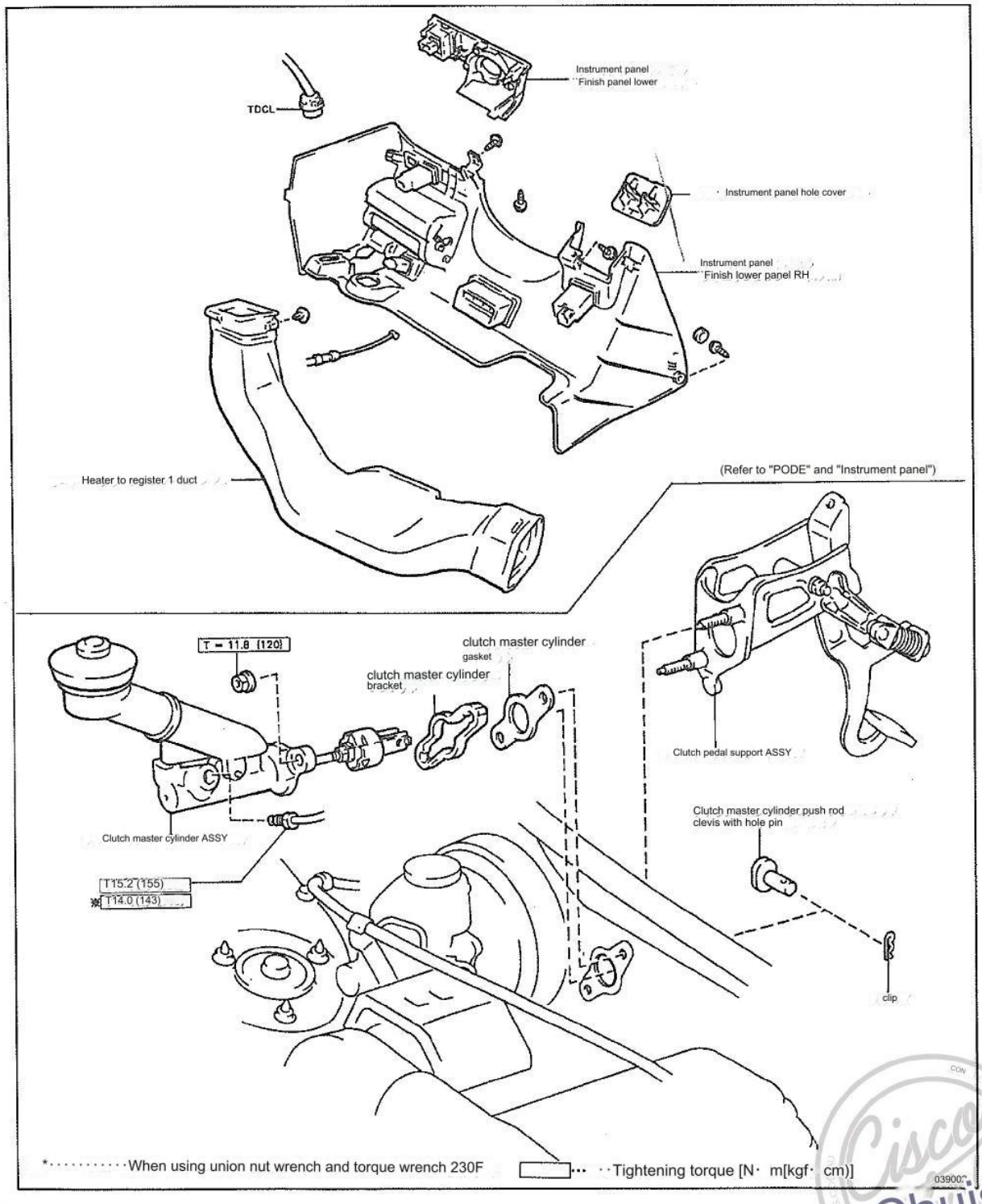
TD048457

clutch master cylinder

Detachment configuration diagram



039000

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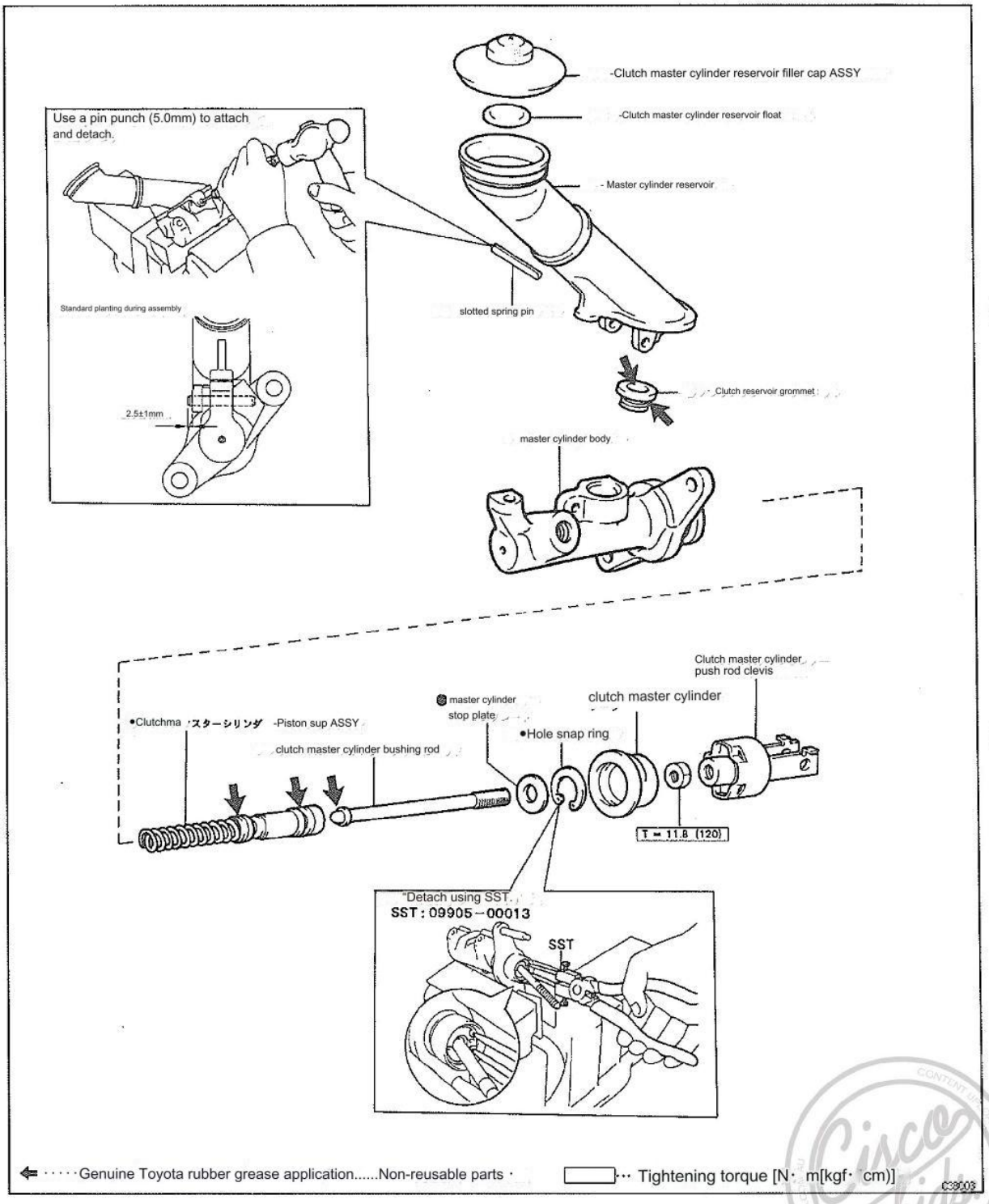
Exploded configuration diagram



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T0048158

clutch release cylinder

Preparation items

tool

	09023-00100	union nut wrench	For clutch tube disconnection and connection

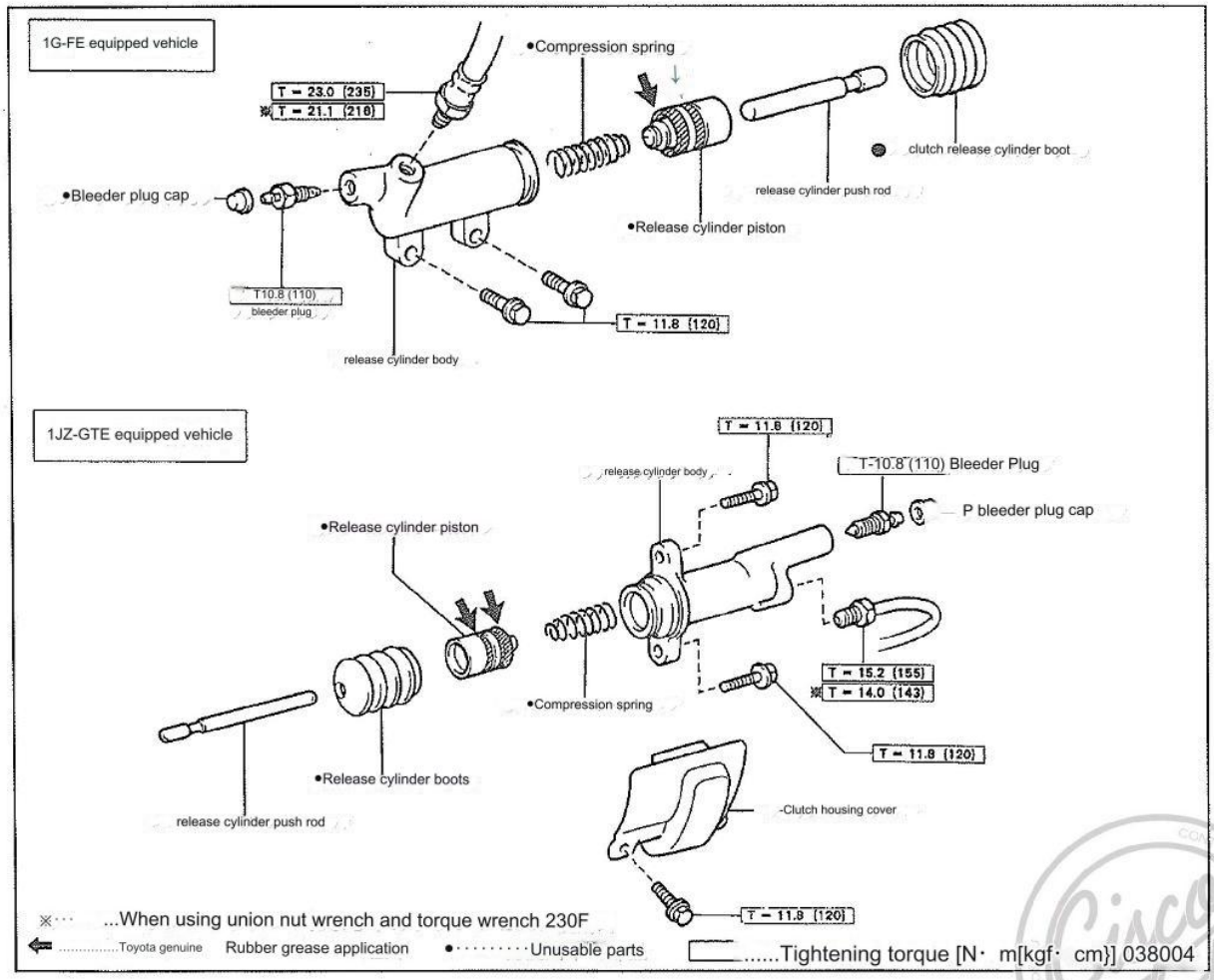
Oils and fats/others

Toyota genuine rubber grease	00002	For applying to each part
Toyota genuine brake fluid 2500H	32503	For clutch and brake air bleeding

T0049459

clutch release cylinder

Detachable exploded configuration diagram



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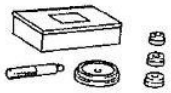
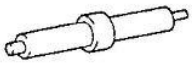
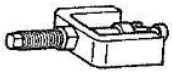
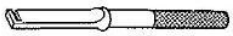
T0048480

Clutch ASSY

Preparation items

S S T

	09250-10011	Replacer set A	
	(09252-10010)	Replacer handle 1	For bearing (input shaft) installation
	(09254-10010)	Timing gear cover bushing remover & replacer	For bearing (input shaft) installation
	09301-00110	clutch guide tool	For clutch disc guide
	09303-35011	Input shaft front bearing puller	For bearing (input shaft) removal
	09333-00013	clutch diaphragm spring aligner	For diaphragm spring finger height adjustment
	09905-00012	Snap Ring No.1 Expander *	Snap ring removal (vehicles equipped with 1JZ-GTE)

tool

	09023-00100	union nut wrench	For clutch tube disconnection and connection

instrument

	AA-828	roller measuring head Treated as Banzai, Treated as Iyasaka Co., Ltd.	Clutch ASSY for inspection
Dial gauge		21201	Clutch cover, clutch disc and flywheel inspection
Caliper (0~200mm)		20201	For clutch disc inspection

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Oils and fats/others

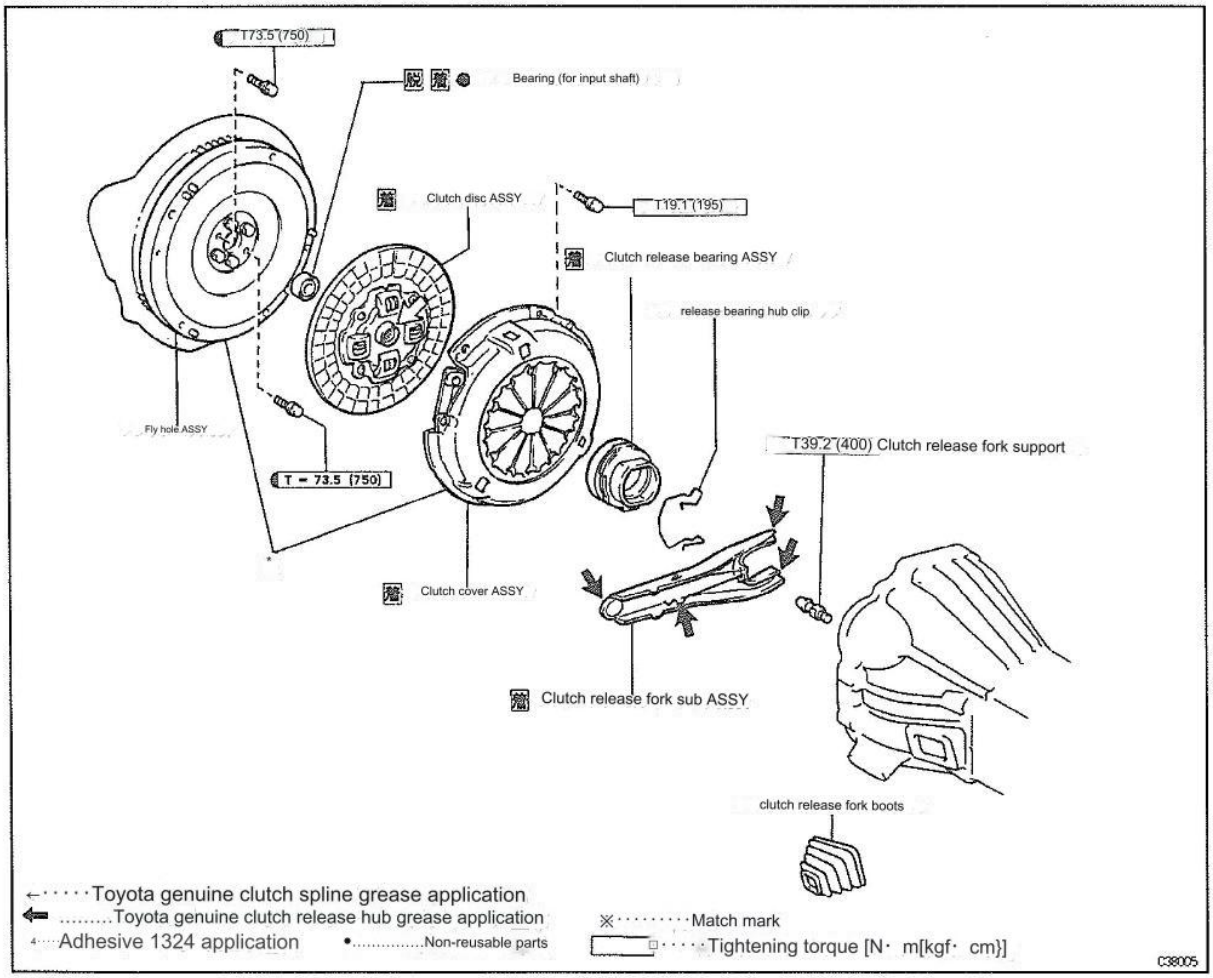
Toyota genuine MP grease No. 2 30204	(For coating each part)
Toyota genuine clutch release hub grease 30505	For applying to each part
Toyota genuine clutch spline grease 30506	(For coating each part
Adhesive 1324 50401	For applying to each part

T0048481

Clutch ASSY (vehicles equipped with 1G-FE)

4

Exploded configuration diagram



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Points to note when removing the clutch ASSY

Do not allow oil, fat, foreign matter, etc. to adhere to the surfaces of the clutch disc lining, pressure plate, and flywheel.

1 Transmission ASSY removal

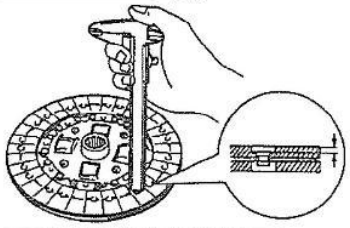
("Manual transmission" "Transmission ASSY"

- Refer to "Transmission ASSY installation/removal configuration diagram")

Inspection of clutch components

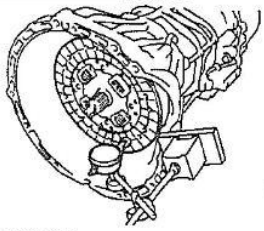
4

Clutch disc wear inspection



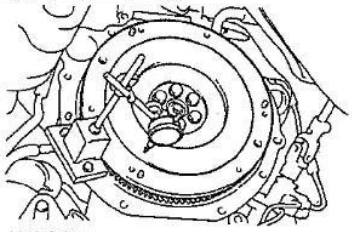
· Limit 0.3mm (rivet sinking)

Clutch disc vibration check



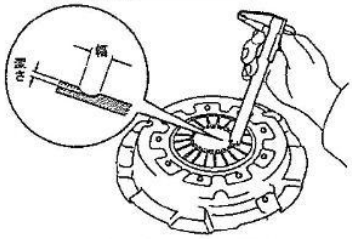
·Limit 0.8mm

Flywheel check



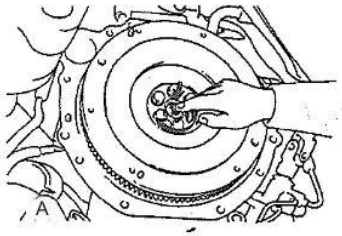
·Limit 0.1mm

Diaphragm spring wear inspection



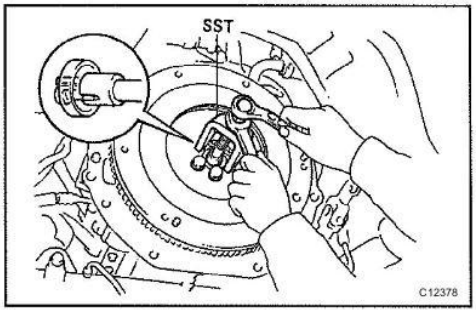
·Limit 0.5mm (depth) 6.0mm (width)

Input shaft front bearing inspection



· While rotating, check for any binding or abnormal noises.

C37804



C12378

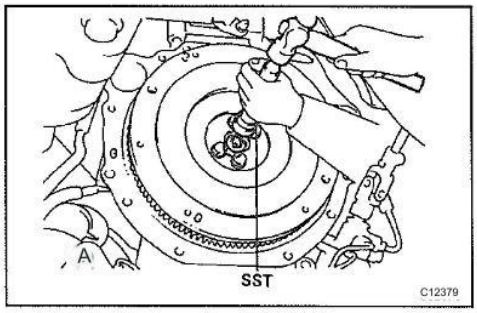
bearing replacement

If the release bearing is defective, replace it with the release bearing (ASSY).

1 Bearing replacement (for input shaft)

(1) Remove the diagonal flywheel mounting bolts and remove the bearing using SST.

S S T 09303-35011



C12379

(2) Install new bearings using SST.

S S T 09252-10010 09254-10010

(3) Degrease the flywheel set bolt and bolt hole.

(4) Apply Adhesive 1324 to 2~3 threads from the tip of the bolt and tighten the Install the root.

(5) Fix the crankshaft pulley and tighten the bolt.

After assembly, do not start the engine for one hour.

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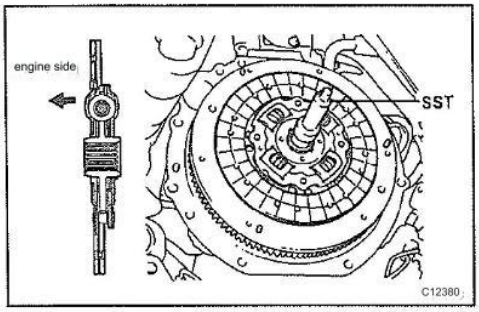
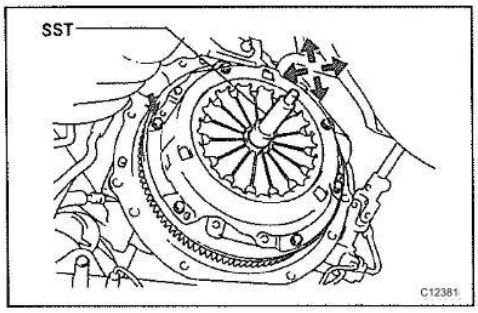


Points to note when installing the clutch ASSY

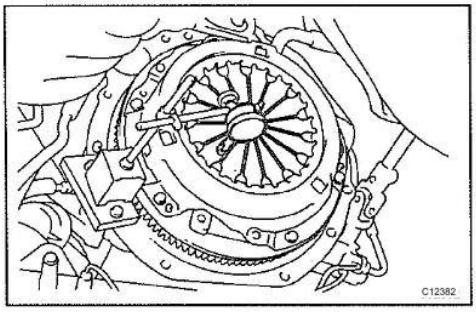
1 Installing the clutch disc and clutch cover

(1) Center the clutch disc using SST.

S S T 09301-00110



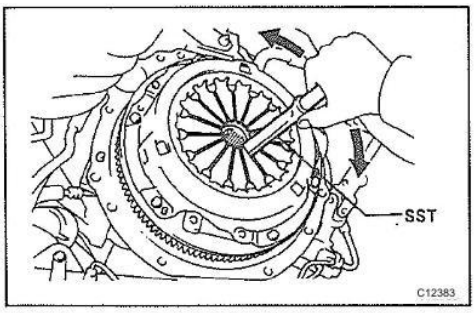
(2) Align the alignment marks on the flywheel and clutch cover, and lightly tighten the bolts starting from the dowel pins. Gently shake the SST up and down and left and right to make sure the disc is in the center position, then tighten completely. Tighten the bolts evenly in several steps.



2 Inspect and correct uneven height of diaphragm spring fingers

(1) Use a dial gauge with a roller probe to measure the flywheel. Rotate the eel and check for uneven height of the fingers.

Limit 0.5mm



(2) If the limit is exceeded, use SST to correct the uneven height of the fingers.

S S T 09333-00013

3 Installing the clutch release bearing and fork After installation, move the fork back and forth to confirm that the hub slides smoothly.

4 Transmission ASSY installation (Refer to "Manual transmission" "Transmission ASSY" - "Transmission ASSY installation/removal configuration diagram")

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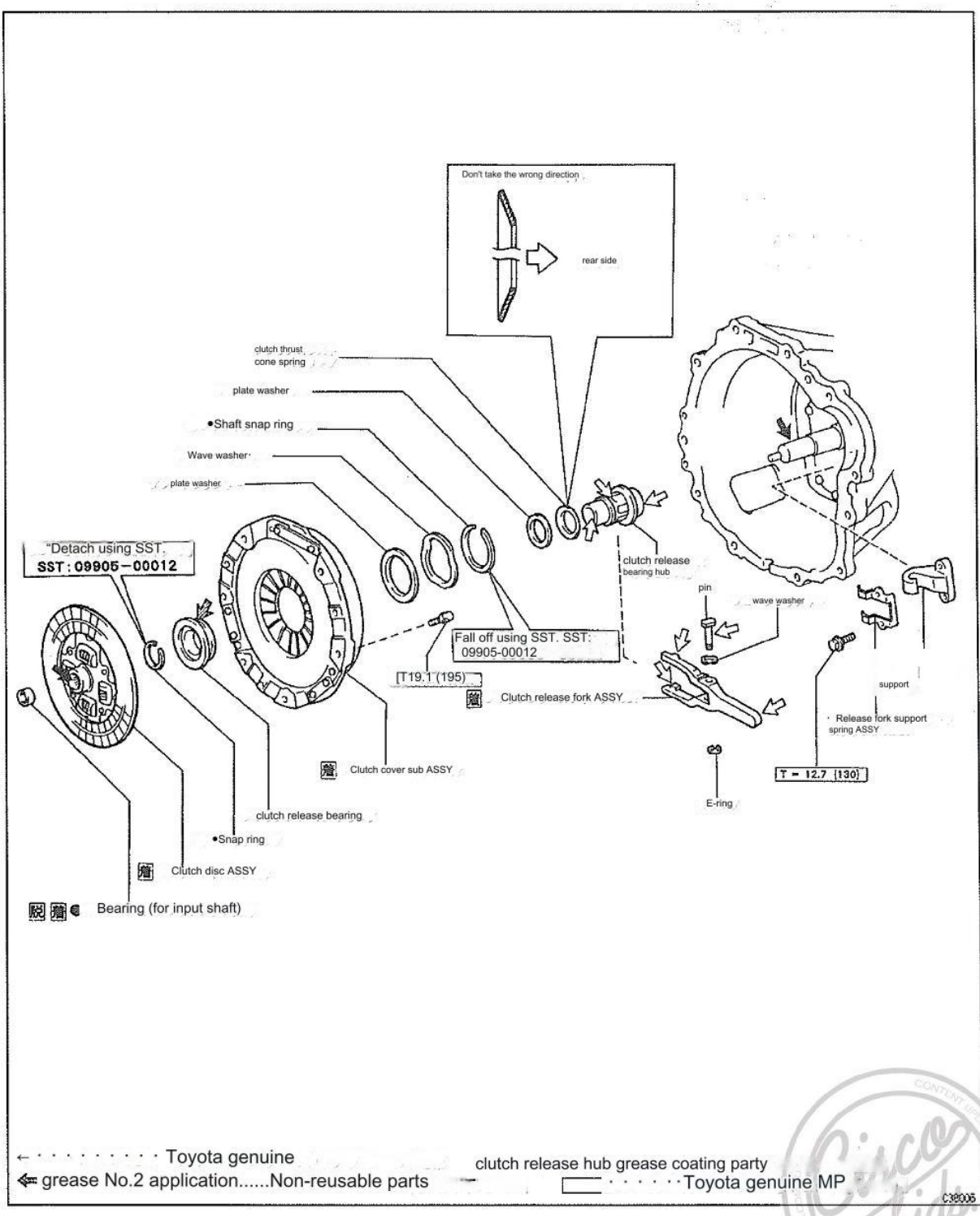
Clutch ASSY (vehicles equipped with 1JZ-GTE)

Exploded configuration diagram



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Points to note when removing the clutch ASSY

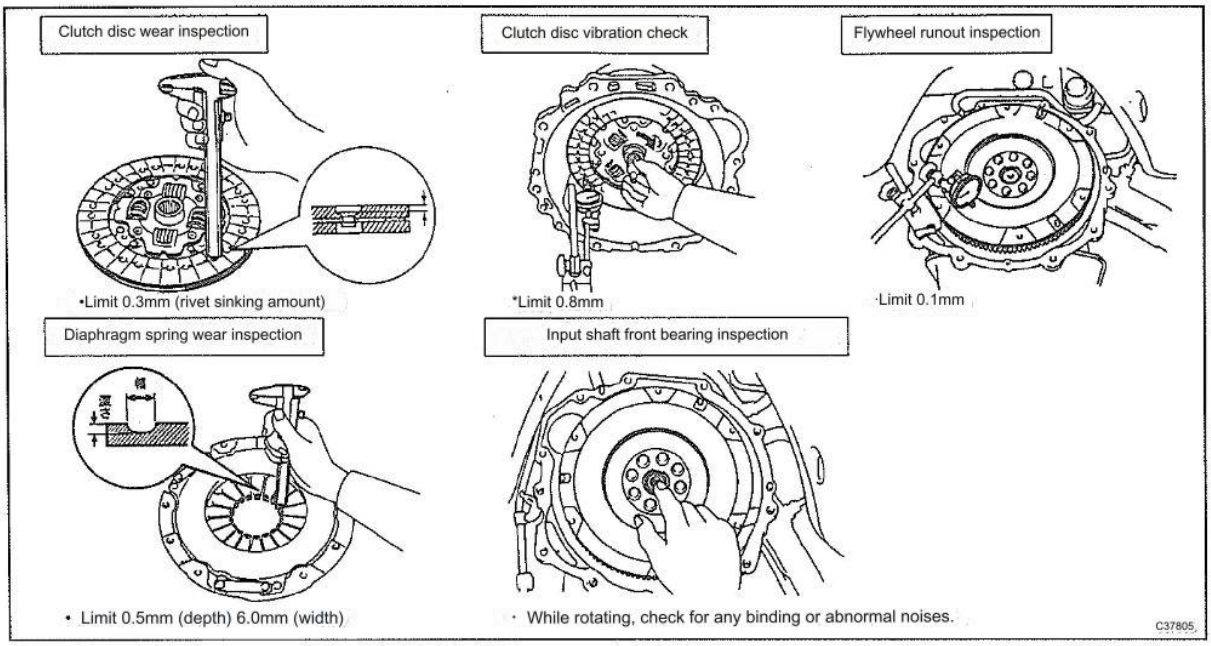
Do not allow oil, fat, foreign matter, etc. to adhere to the clutch disc lining, pressure plate, or flywheel surface.

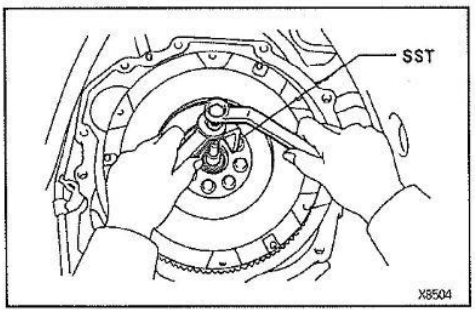
1 Transmission ASSY removal

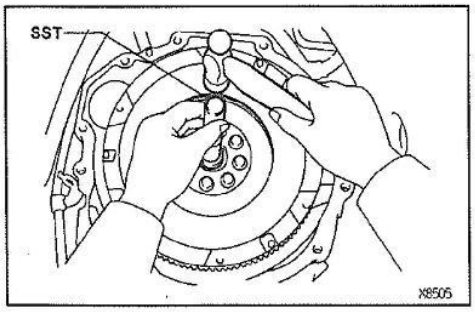
("Manual transmission" "Transmission ASSY"

- Refer to "Transmission ASSY installation/removal configuration diagram")

Inspection of clutch components







bearing replacement

If the release bearing is defective, replace it with the release bearing ASSY.

1 Bearing replacement (for input shaft)

(1) Remove the bearing using SST.

S S T 09303-35011

(2) Install new bearings using SST.

S S T 09252-10010 09254-10010

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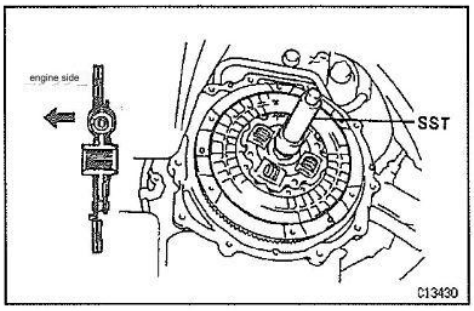


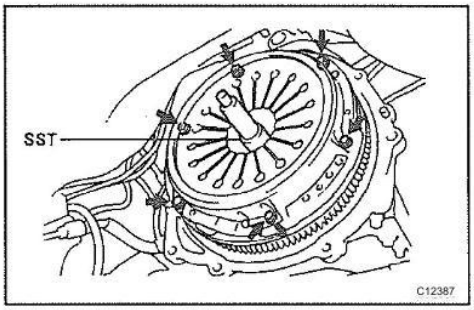
Points to note when installing the clutch ASSY

1 Installing the clutch disc and clutch cover

(1) Center the clutch disc using SST.

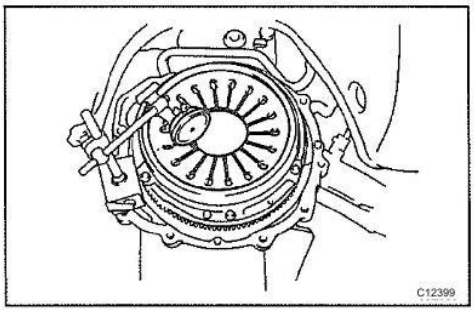
S S T 09301-00110

4



(2) Align the alignment marks on the flywheel and clutch cover, then lightly tighten the bolts starting from the dowel pins. Gently shake the SST up and down and left and right to make sure the disc is in the center position, then tighten

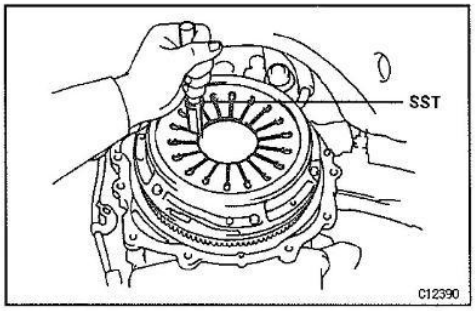
CAUTION: Tighten the bolts evenly in several steps.



2 Inspect and correct uneven height of diaphragm spring fingers

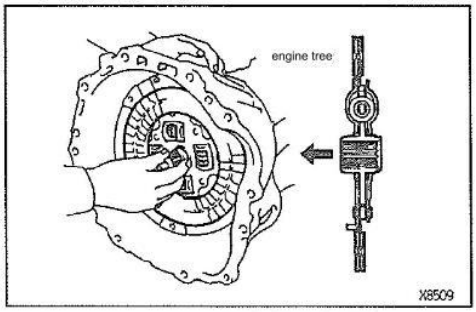
(1) Using a dial gauge with a roller probe, rotate the flywheel and check for uneven heights of the fingers.

Limit 0.5 mm



(2) If the limit is exceeded, use SST to correct the uneven height of the fingers.

S S T 09333-00013



3 Installing the clutch disc Make sure to install the clutch disc in the wrong direction.

4 Installing the clutch release fork

After assembly, move the release fork ASSY back and forth and check that the hub slides smoothly.

5 Transmission ASSY installation

("Manual transmission" "Transmission ASSY"

- Refer to "Transmission ASSY removal configuration diagram")

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5 Manual transmission

Basic inspection 5-2
Preparation items 5-2
Basic inspection 5-2
Transmission oil amount... 5-2
extension housing
Rear oil seal... 5-2
Preparation items 5-2
extension housing
Rear oil seal... 5-3
Detachment configuration diagram 5-3
Transmission ASSY. 5-4
Preparation items 5-4
Transmission ASSY installation and removal 5-4
Detachment configuration diagram 5-5

5

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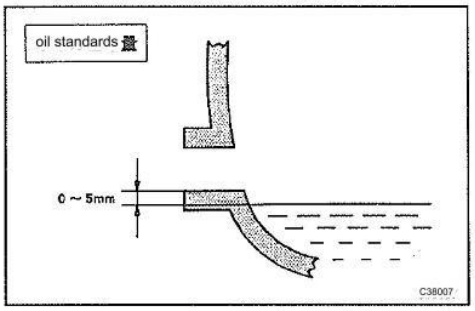
T0049482

Basic inspection

Preparation items

Oils and fats/others

Toyota genuine MG gear oil special!! (75W-90) 30108	For transmission injection



5

Basic inspection

Transmission oil amount

1 Oil level check

HINT
- Stop the car on a flat road.
- Too much or too little oil may cause trouble.
- When changing the oil, recheck the oil level after driving.

(reference)

Engine model	Oil amount (L)
1G-FE equipped vehicle	2.6
1JZ-GTE equipped vehicle	3.0

700-40404

Extension housing

Rear oil seal

Preparation items

S S T

09308-10010 Oil seal puller	Extension housing rear oil seal "For removal"
09325-20010 transmission oil plug	Extension housing rear oil seal installation (1G-FE equipped vehicle)
transmission oil plug 09325-40010 70229	Extension housing rear oil seal installation (1JZ-GTE equipped vehicle)

Oils and fats/others

Genuine Toyota MP Grease No. 2 30204	For oil seal lip application
Toyota genuine MG gear oil special 11 (75W-90) 30108	For transmission injection

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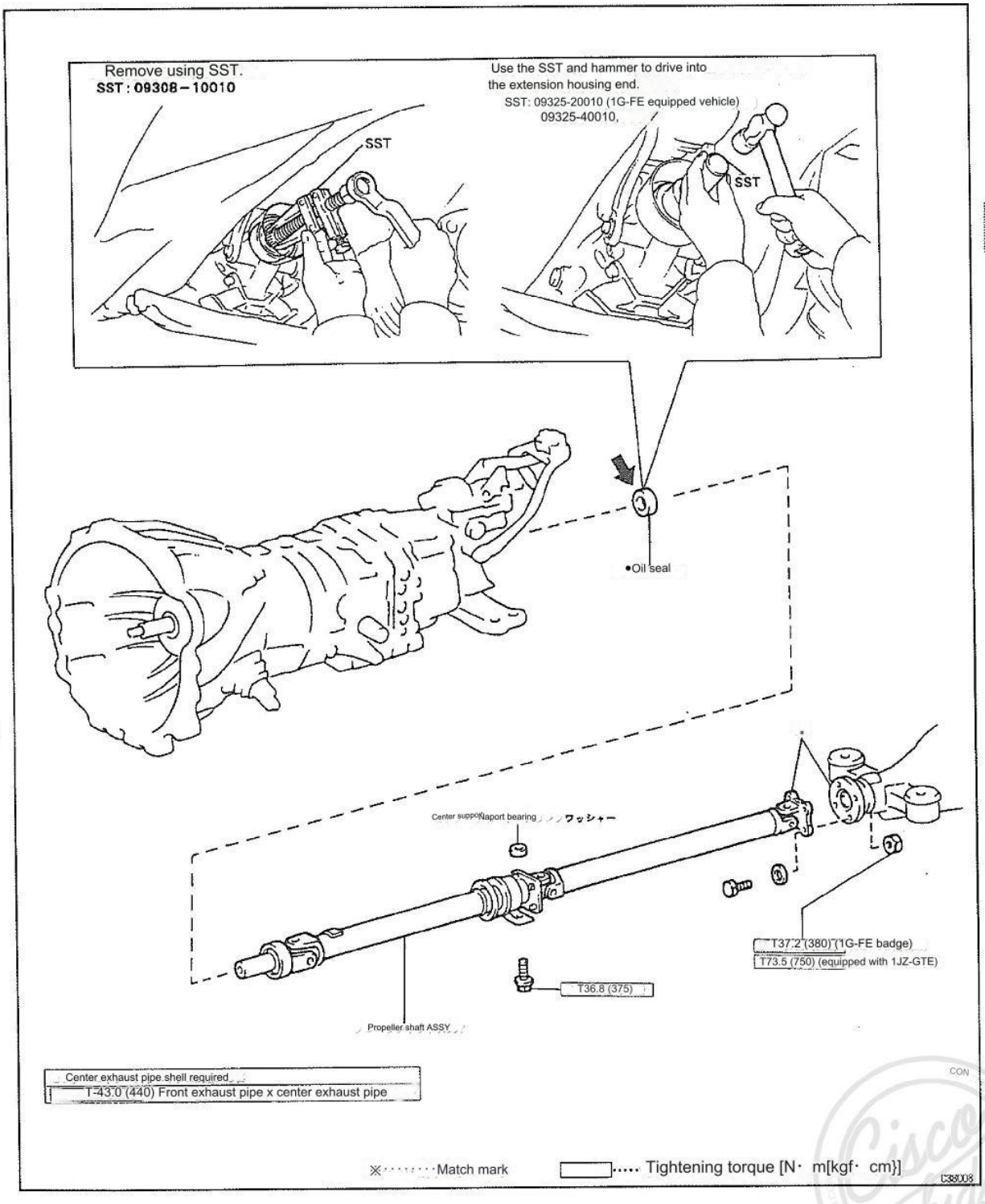
Extension housing

rear oil seal

Detachment configuration diagram



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T0049466

Transmission ASSY

Preparation items

S S T

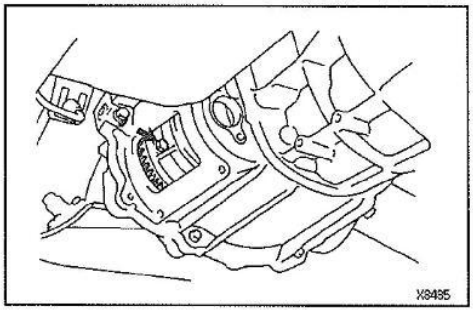
	09325-20010	transmission oil plug	For preventing transmission oil leakage (vehicles equipped with 1G-FE)
Transmission oil plug 09325-40010 70220			For preventing transmission oil leakage (vehicles equipped with 1JZ-GTE)

tool

	09023-00100	Union nut wrench	For clutch tube disconnection and connection

Oils and fats/others

Toyota genuine MG gear oil special II (75W-90) 30108	For transmission injection
Toyota genuine brake fluid 2500H 32503	For removing the clutch chair



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Transmission ASSY removal and removal

To remove the transmission ASSY, remove the clutch housing cover and six clutch cover mounting bolts, and then separate the clutch cover from the flywheel. (Vehicle equipped with 1JZ-GTE)

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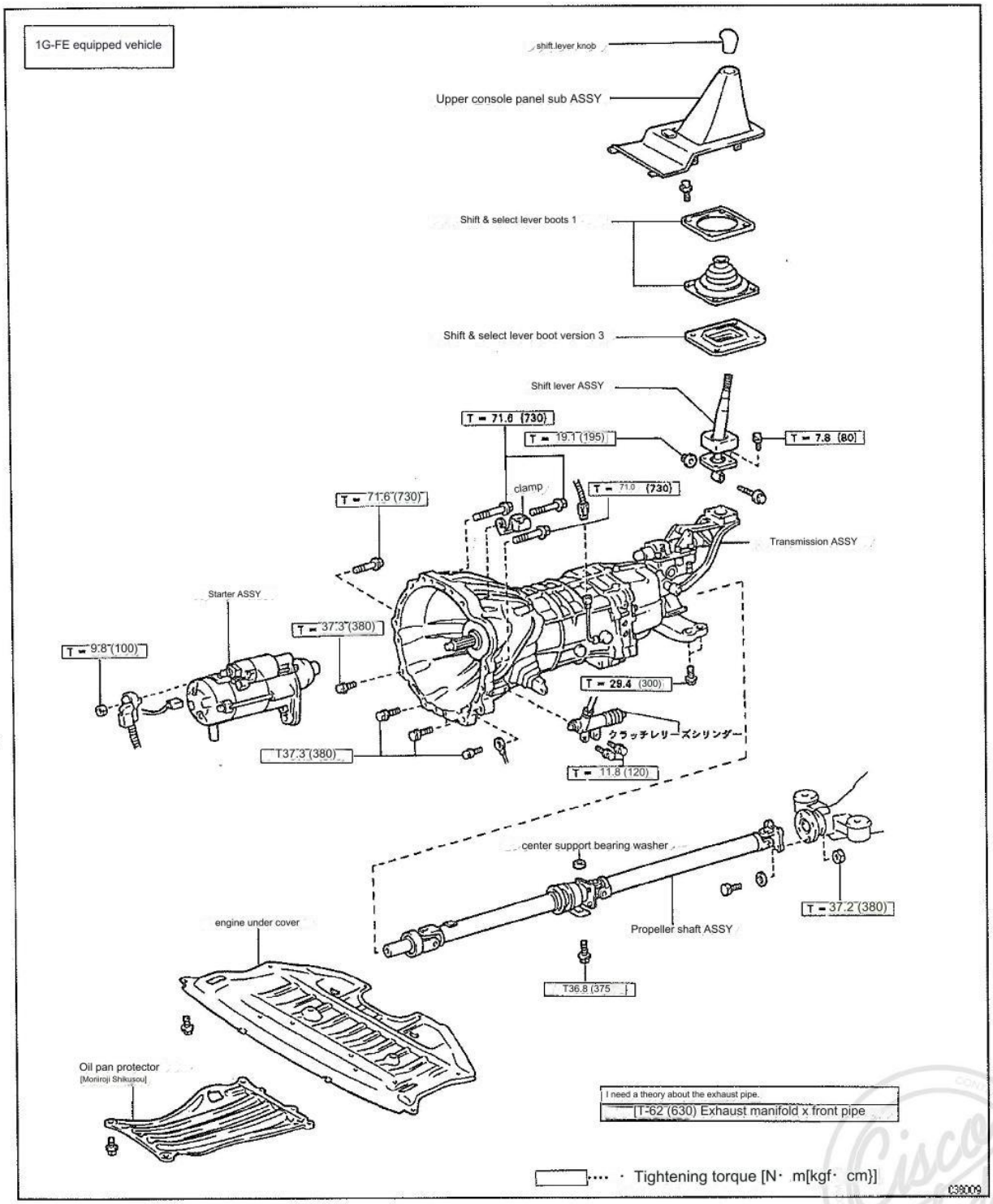
Detachment configuration diagram



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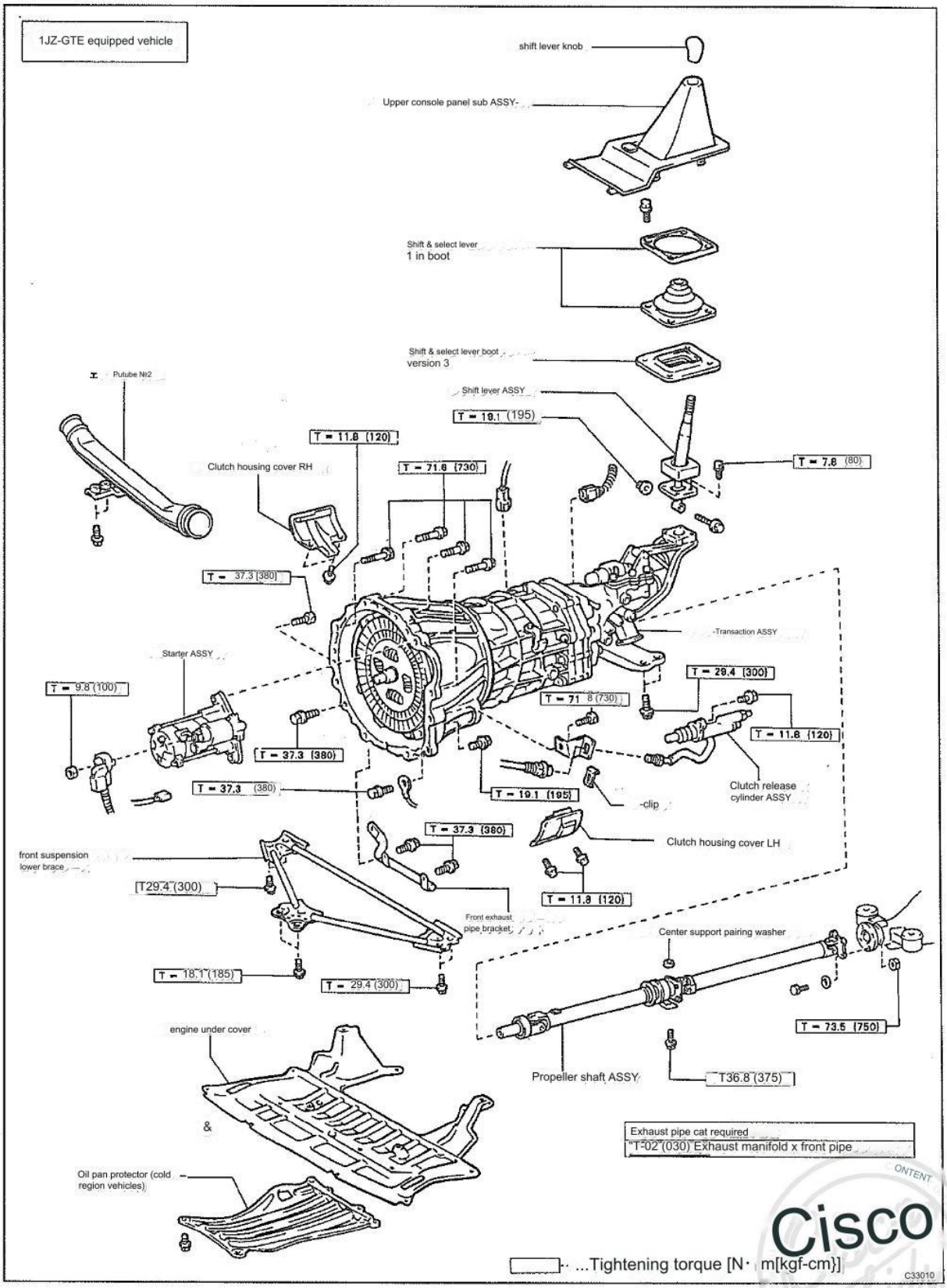

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6 automatic transmission

Basic inspection, adjustment 6-2
supplies ..... 6 — 2
Basic inspection, adjustment 6-2
Transmission oil inspection/ 6-2
Throttle cable inspection and adjustment 6-2
Shift lever position check, adjustment/ 6-3
Neutral start switch inspection and adjustment 6-3
Functional check 6-4
Reserves 6 4
Functional check ..... 6 — 5
Function check list ..... 6 — 5
stall test ..... 6 — 5
time lag test 6-6
Hydraulic test 6-6
driving test 6-8
speed table 6-9
ECT ..... 6 - 12
supplies 6-12
Parts layout 6-13
List of sensors and actuators used 6-14
Troubleshooting ..... 6 — 15
How to proceed with troubleshooting ..... 6 — 15
ECT external wiring diagram (outline) ..... 6 - 16
Diagnosis check... 6-20
Troubleshooting by problem symptom
(2JZ and 1JZ-GTE A/T only) ... 6 — 23
T- terminal output voltage measurement 6-32
Manual drive test ..... 6 — 33
Single unit inspection 633
TRANSMISSION SOLENOID 6-33
PATTERN SELECT SWITCH 6-34
Transmission control switch 6-34
Oil temperature sensor 6- 35
Speed sensor No.2, No.3 ..... 6 35
water temperature sensor ..... 6 - 35
Neutral start switch 6-35
Stop lamp switch ..... 6 - 35
engine control computer 6-35
with key interlock
Shift lock device ... 6 - 48
supplies 6-48
Parts layout 6-48
Functional check 6-49
Shift lock device with key interlock 6 - 49 ..... Individual
inspection/ 6-50
shift lock solenoid
(gate type shift lever) ... 6-50
key interlock solenoid 6-50
stop lamp switch 6-50
Shift lock control switch
(gate type shift lever) ... 6 50
Shift lock control computer 650
Reverse position alarm device 6-53
supplies ..... 6 — 53
Unit inspection 6-53
Reverse Position Warning 6- 53
Buzzer Overdrive (A43D) 6-54
supplies ..... 6 — 54
Unit inspection ..... 6 — 54
Transmission solenoid 6- 54
transmission control switch 6-54
throttle cable 6- 55
supplies 6-55
throttle cable 6-55
A43D, A42DE 6-56
disassembled diagram 6-56
Points to note when installing the throttle cable 6-57
A340E, A340H 6-58
disassembled diagram 6-58
extension housing
Rear oil seal ... 6-59
Reserves ..... 6 - 59
extension housing
Rear oil seal ... 660
extension housing
Rear oil seal replacement ... 6-60
Floor shift assembly 6-61
Reserves 6-61
Floor shift assembly 6-61
Schematic diagram 6-62
Exploded view 6-63
Points to note when disassembling the floor shifter 6-65
Transmission ASSY 6-67
supplies 6-67
Transmission ASSY 6-67
Schematic diagram 6-68
Unit inspection 6-71
torque converter 6-71
drive plate 6-72

6

Steamed noodles
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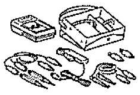
T0049072

Basic inspection, adjustment

supplies

soup bowl

	09082-00012	toyota electrical tester	For continuity check

Oil and other

Toyota Genuine Auto Fluid D-II	30308	For automatic transmission injection (A42DE, A43D)
Toyota genuine auto fluid type T-II	30312	For automatic transmission injection (A340E, A341E, A340H)

T0049073

6

Basic inspection, adjustment

transmission oil check

1 oil level check

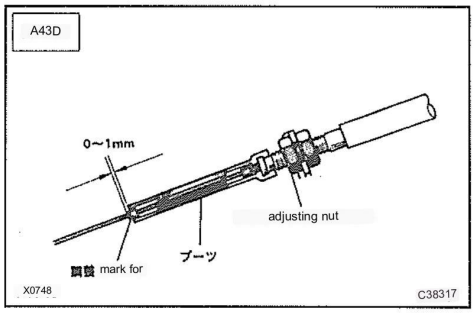
note · Too much or too little oil can cause problems.

· After confirming the idling speed, check it while it is idling.

· Stop the vehicle on a flat road.· Check if the transmission is fully warmed up (70-80℃). (1) Slowly move the shift lever from P to N back to the range.

(2) Confirm that the level gauge is within the "HOT" range.

(3) Check for oil leaks when the amount of oil is low.



Throttle cable inspection and adjustment

1 Throttle valve fully open check

2 Throttle cable inspection and adjustment

(1) Check the mounting condition of the throttle cable. (2)

Measure the length of the tip of the cable adjustment mark and the tip of the boot.

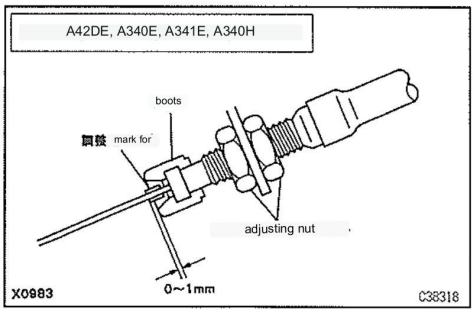
A43D· · · ····· At full throttle

A42DE,A340E, A341E, A340H· · · · When the accelerator is fully closed

value 0~1mm

If it is out of the standard value, adjust it with the adjusting nut.

T=14.7N•m {150kgf•cm}



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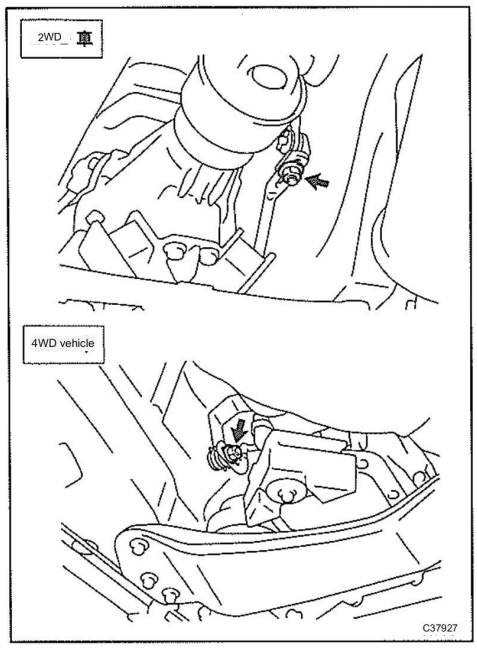
Shift lever position check and adjustment

1 Check the shift lever position

(1) Turn on the ignition switch and depress the brake pedal. (2) Shift the shift lever to each range. At this time, check that the shift lever can be operated smoothly, that it moves smoothly in each range, and that the position indicator indicates accurately.

(3) When the engine is started and the vehicle is shifted from N to D, the Make sure it goes forward and reverses when you shift to R range.



2 Shift lever position adjustment

(1) Remove the swivel nut from the shift lever and connecting rod. Remove.

(2) Push the manual valve lever of the neutral start switch to the rear of the vehicle until it stops, then return it two steps (N range).

to (3) Put the shift lever in the N range and lightly push it toward the R range. and tighten the swivel nut.

T=12.75N· m {130kgf· cm}

注意 Do not press the shift lever too hard. (4) After adjustment, check the operation condition and operation.

6

Neutral start switch inspection and adjustment

1 Neutral start switch inspection

(1) Check that the engine starts only when shifting to N or P range, and does not start in any other range. (2) Check that the backup lamp lights up and the reverse position warning buzzer sounds when the R range is selected, and that it does not work in other ranges.

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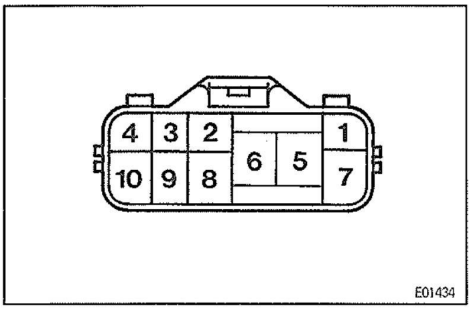

2 Neutral start switch continuity

check (1) Disconnect the neutral start switch connector.

(2) Check continuity between terminals.

standard

There is ○○ lead

ID / Terminal name / shift position	6 B	5 N	4 C	7 PL	8 RL	10 NL	9 DL	2 2L	3 LL
P	○	○		○					
R			○		to				
N	○	○	○			to			
D			○				○		
2			○					○	
L			○						○

6

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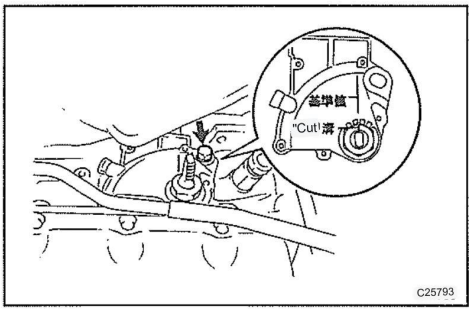


3 Neutral start switch adjustment

(1) Loosen the set bolt of the neutral start switch. (2) Place the neutral reference line and kerf on the neutral start switch. to match.

(3) Tighten the set bolt.

T=12.75N•m {130kgf•cm}

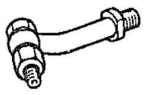
(4) Confirm that there is continuity between the NB terminals.

T0040074

Functional check

supplies

計 器

	OPG-210	automatic transmission oil pressure gauge set	* For oil pressure measurement
	ATG-100	Treated by Banzai Co., Ltd. / Treated by Iyasaka Co., Ltd.	
	(OPG-142)	Adapter C	For oil pressure point
	(ATG-OP10)	(株)Treated by Banzai / Treated by Iyasaka Co., Ltd.	

Fats and oils Other

Toyota Genuine Auto Fluid D-II	30308	for automatic transmission injection (A43D, A42DE)
Toyota genuine auto fluid type T-III	30312	for automatic transmission injection (A340E, A341E, A340H)

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Functional check

Caution
- Each test must be performed after basic inspection and adjustment and engine inspection and adjustment. Do it after you've done it.
- Perform at normal driving oil temperature (50-80°C).
- Turn off the air conditioner and cruise control.

Function check list

Inspection items		Purpose of inspection	At the time of the bad point	
			Defect phenomenon	Defective part
stall test		engine power, automatic transmission Check the slippage of the clutch inside the transmission and the function of the torque converter stator.	• gear shift error · The vehicle speed does not match the engine speed.	• Insufficient engine power · Slippage of clutches and brakes • · Slippage of torque converter · Decrease in line pressure
time lag test		After operating the shift lever, Tick transmission completes shifting Check the time required to	After operating the shift lever, it takes a long time to shift gears.	· Brake and clutch slippage related to D and R range · Lower line pressure
hydraulic test	line pressure inspection	Confirmation of quality of control oil pressure	· Inability to shift gears · Large gear shift shock • Large time lag	· Line pressure control failure (linear solenoid SLT system) [VZ-GTE only] · Oil • pump primary regulator valve · Throttle valve · Improper adjustment of the throttle cable
	governor pressure Inspection ¥1	Confirmation of quality of control oil pressure	· Inability to shift gears · Incorrect gear shifting	· Coverer valve • line pressure failure
	Accumulator back pressure inspection *2	Confirmation of quality of control oil pressure	Large shift shock	· Clutch engagement hydraulic control failure (Linear solenoid SLN • system) Line pressure failure

*1 A43D only

*2 A340E (ECT-IE) only

Standard value

Transmission model	engine type	Stall speed [r/min]
A42DE	1G—FE	2400±150
A340E	1JZ-GE	2500±150
A341E	1JZ-GTE	3100 ± 150
A340E	2JZ—GE	2600 ± 150
A43D	2L-TE	2350±150
A340H	1JZ-GE	2500±150

stall test

1 Stall speed check

注意 Do not perform continuously for more than 5 seconds.

(1) Chock the wheels and install a tachometer.

(2) Apply the parking brake and start the engine.

(3) While pressing the brake hard with the left foot, shift to the D range and fully depress the accelerator pedal with the right CONTENT UPLO foot.

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time lag test

1 Time lag check

([Note] When checking continuously, leave an interval of 1 minute.

· Perform the measurement several times and take the average value.

(1) Chock the wheels.

(2) Apply the parking brake and start the engine.

(3) While depressing the brake pedal, shift from N range to D range and R range at idling, and drive until a light shock is felt. measure time.

Reference value N→D range 1.2 seconds or less N R range 1.5 seconds or less

hydraulic test

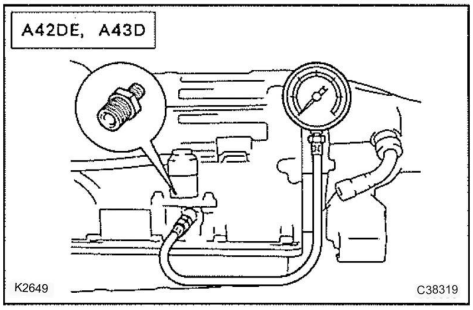
1 Line pressure check

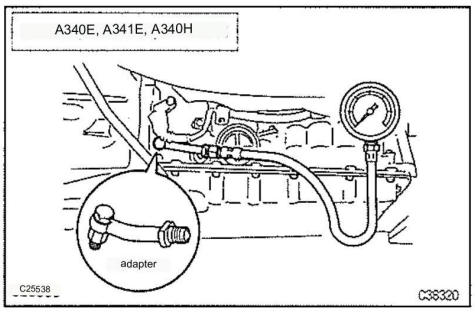
(1) Remove the test plug and install the oil pressure gauge.

(2) Chock the wheels and install the tachometer.

(3) Apply the parking brake and start the engine.

(4) While pressing the brake pedal strongly with the left foot, shift to the D range and R range, Measure the oil pressure.





Standard value

Transmission model (Engine model)	shift position	Line pressure [MPa {kgf/cm²}] when idle	Stall
A42DE (1G−FE)	D-range	0.344~0.431 (3.5 4.4)	1.011 1.206 (10.3 12.3)
	R-range	0.452 0.657 [4.6~6.7)	1.344 1.735 (13.7~17.7)
A340E (1JZ−GE)	D-range	0,393 0.451 (4.0~4.6)	1.0111.147 (10.3 11.7)
	R-range	0.579~0.657 (5.9~6.7)	1.305 1.637 (13.3 16.7)
A341E (1JZ−GTE)	D-range	0.403 0.460 (4.1~4.7)	1.118~1.255 (11.4 12.8)
	IR range	0.628 0.706 (6.4~7.2}	1.373 1.696 (14.0 17.3)
A340E (2JZ-GE)	D-range	0.383 0.441 (3.9 4.5)	1.266 1.402 (12.9 14.3)
	JR range	0.618 0.715 (6.3 7.3)	1.726 2.059 (17.6~21.0)
A43D (2L-TE)	D-range	0.442 0.500 (4.5 5.1)	0.981 1.157 (10.0~11.8)
	R-range	0.809 0.706 (6.2~7.2)	1.305 1.696 (13.3~17.3)
A340H (1JZ-GE)	D-range	0.393 0.451 {4.0~4.6)	1.011 1.147 (10.3 11.7)
	IR range	0.579 0.657 (5.9~6.7)	1.305 1.637 (13.3 16.7)

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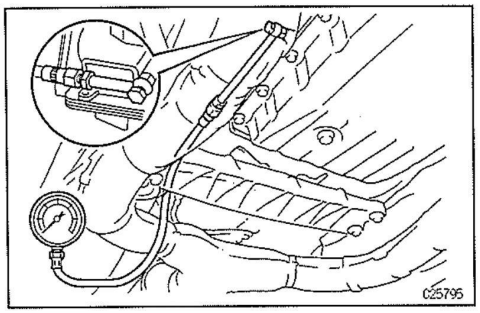


2 Accumulator back pressure inspection

(Linear solenoid SLN control oil pressure)

(1) Remove the test plug and install the oil pressure gauge.

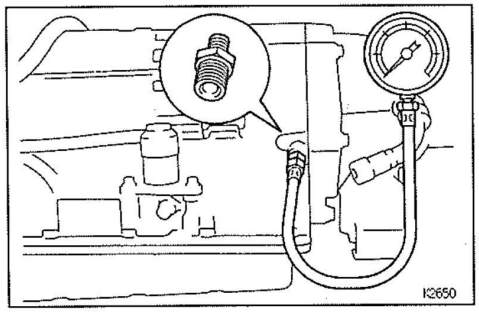
be.

(2) Chock the wheels.

(3) Apply the parking brake and start the engine.

(4) Shift to D range at idle speed and measure oil pressure.

Standard weight Approx. 0.245MPa {2.5kgf/col}



3 Governor pressure check (A43D)

(1) Remove the test plug and install the oil pressure gauge.

(2) put the vehicle on the drum tester or speedometer tester set.

(3) Pull the parking brake lever.

(4) Start the engine.

(5) Shift to D range and check oil pressure at each vehicle speed.

Reference value

Transmission model (Engine model)	Output shaft rotation speed [r/min]	vehicle speed [km/h]	Kavanagh pressure [kPa {kgf/cm²}]
A43D (2L-TE)	1000	26	69 127 (0.7~1.3)
	1800	48	157 215 (1.6 2.2)
	3500	93	471 588 (4.8~6.0)

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[recollection times]

driving test

注意 · Confirm the safety of the road carefully.
· Perform at normal driving oil temperature (50-80°C).
· Perform each shift pattern.

Check item	Inspection and confirmation procedures
D range shifting function	Normal driving (general city driving) 1st gear → 2nd gear → 3rd gear → O/D Inspection to.
Shock level when shifting to D range	Check the shock level at each upshift under normal driving conditions.
Actuation of transmission control switch (straight type)	Turn the transmission control switch from ON to OFF in the O/D speed range and ↔ check that it shifts to O/D 3rd gear.
Shift point when the accelerator pedal is fully open	Start with the accelerator pedal fully open in D range, and upshift from 1st gear to 2nd gear. conforms to the gear table.
kickdown function	· Check that each gear can be kicked down and downshifted. · Check the shock level at kickdown.
Action of engine braking	• While driving in 3rd gear in D range (about 40-50km/h) Shift to D2 range and check engine braking action in 2nd gear. While driving • in 2nd gear in 2nd gear (approximately 20-30km/h) 2 → Shift to L range, 1st gear Check engine braking action in gear. Lockup ON
Lockup function (except A43D)	on flat road The speed conforms to the gear table and the accelerator radar pedal Confirm that the engine speed does not change significantly when the lever is lightly depressed.
2nd gear hold function (vehicles with ECT)	When starting with 2 range snow or power 1 pattern, start in 2nd gear and confirm that it does not shift to 1st or 2nd gear.
Operation of P range	Stop the vehicle on a slope (approximately 5°), shift to P, and engage the parking brake. Check that the vehicle does not move when the key is released.
Abnormal noise, vibration	Check for abnormal noise and vibration during acceleration, deceleration, and shifting.
oil spill	After the running test, inspect each part and check that there are no oil leaks.

*1: A341E, A340H

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gear table

A43D (2L-TE)

[km/h]

Gear position	D-range							L range
Throttle valve opening	Fully open			Fully closed	全 開			Fully closed
shift point	1 → 2	2 → 3	3 → O/D	3 → O/D	O/D → 3	3 → 2	2-1	2-1
車 速 [km/h]	37 ～ 51	72 ～ 88	—	40~52	105 ～ 129	67 ～ 83	30~44	44 ～ 63

A42DE (1G－FE)

[km/h]

6

Throttle valve opening		全 BA			全 閉		All PAs		
shift point		1 → 2	2-3	3 → O/D	3 → O/D	0/D → 3	O/D → 3	3 → 2	2-1
D.	normal power	56 ～ 66	97 ～ 110	136 ～ 151	30~36	21 ～ 26	132~144	87-96	38 ～ 44
	snow *1	—	97~110	136 ～ 151	30 ～ 36	21 ～ 26	132~144	87 ～ 96	—
2	normal power	56 ～ 66	—	—	—	—	—	91 100 (straight type) *2	38 ～ 44
	snow *1	—	—	—	—	—	—	114~125 (gate type)	—
L	normal, power snow	—	—	—	—	—	—	—	52 59 *2

*1: Snow mode starts 2nd, no 12th shift *2:
Same when throttle valve opening is 0%

Lock-up point (at 5% throttle valve opening) [km/h]

Lock-up	ON		OFF	
gear position	3 *3	O/D	3 *3	O/D
normal snow	48 ～ 55	48~55	47 ～ 54	47~54
power	57 ～ 65	57~65	55 ～ 62	55 ～ 62

*3: O/D switch OFF (0/DL) O み

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A340E (1JZ−GE)

[km/h]

Throttle valve opening		全 open			all closed		all open		
shift point		1→2	2→3	3→O/D	3→O/D	O/D→3	O/D→3	3-2	2→1
D.	normal Power	54-63	103 ~ 114	157~170	40~46	22 ~ 25	150 ~ 160	95 ~ 103	42 ~ 48
	snow *1	—	103 ~ 114	157 ~ 170	40~46	22~25	150 ~ 160	95~103	—
2	normal power	54 ~ 63	—	—	—	—	—	108~117 *2	42~48
	snow *1	—	—	—	—	—	—	108~117 *2	—
L.	normal power	—	—	—	—	—	—	—	53 59 *2

*1: Snow mode starts 2nd, no 12th shift

*2: Same when the throttle valve opening is 0%

6

Flex lockup control point (D range) [km/h]

Flex lockup control		ON			OFF		
gear position		2	3	O/D	2	3	O/D
throttle valve opening	3% (0)	17~2227~32			38-44 16-21 26-31 37-42		
	0% air conditioner ON	—	*386-94 186~94[]			*3 30-3543-49	
	(during deceleration) air conditioner off	—	*3 86~94	86~94	—	*1 22~26	32-36

*3: Only when the 0/D switch is OFF (O/D disabled)

Lock-up point (at 5% throttle valve degree) [km/h]

Lock-up	ON		OFF	
gear position	3 *3	O/D	3*3	O/D
normal power snow	59 ~ 65	55 ~ 61	53 ~ 59	53 ~ 59

A341E (1JZ−GTE)

[km/h]

Throttle valve opening		all open			all closed		all open		
shift point		1-2	2-3	3→O/D	3→O/D	O/D→3	O/D→3	3→2	2-1
D.	normal power	74 ~ 82	123 ~ 135	189~200	41 ~ 45	19 ~ 23	178 ~ 188	111~120	43~48
2	normal power	74 ~ 82 *1	—	—	—	—	—	134-144 *2	43 ~ 48 *1
L.	normal power	—	—	—	—	—	—	—	67 ~ 72 *2

*1: 2nd range power pattern is fixed at 2nd, so no 12 shift *2:

Same when throttle valve opening is 0%

Flex lockup control point (D range) [km/h] Lockup point (at 5% throttle valve opening) [km/h]

Flex lockup control		ON			OFF		
gear position		2	3	O/D	2	3	O/D
throttle valve opening	3% (when accelerating)	17-21 29-3341-45 16-21 27-32 39-44					
	0% ON during Air conditioner	—	*3 92-97 92~97			*3 32-36	46~51
	(deceleration) Air conditioner OFF	—	* 392-97 92-97	—	—	*3 23-27	33-38

*3:3 range only

Lock-up	ON		OFF	
gear position	3 *3	O/D	3*3	O/D
normal power snow	63 ~ 68	55 ~ 60	57 ~ 62	54 ~ 59

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A340E (2JZ-GE)

[km/h]

Throttle valve opening		all open			all closed		all open		
shift point		1→2	2-3	3→O/D	3→O/D	O/D→3	0/D→3	3-2	2→1
D.	auto Power	55 ~ 64	105 ~ 119	163 ~ 179	40~46	18~25	157~170	97 ~ 108	43 ~ 48
	snow *1	—	105 ~ 119	163 ~ 179	40 ~ 46	18~25	157 ~ 170	97 ~ 108	—
2	auto power	55 ~ 64	—	—	—	—	—	102-112 *2	43 ~ 48
	snow *1	—	—	—	—	—	—	102 ~ 112	—
L.	auto power	—	—	—	—	—	—	—	52 58 *2

*1: Snow mode starts 2nd, no 12 shift

*2: Same when the throttle valve opening is 0%

Flex lockup control point (D range) [km/h]

Flex lockup control		ON		OFF	
Gear position		3	O/D	3	O/D
Throttle valve opening	3% (when accelerating)	2934 40~46 27~32 3944			
	0% (deceleration) Air conditioner ON	92~99 *3	92 99 32~37 *3		46~51
	air conditioner off	92-99 *3	92 ~ 99	23-281 *3	33 ~ 38

*3: Only when the 0/D switch is OFF (O/D prohibited)

[km/h] Lockup point (at 5% throttle valve opening) [km/h]

Lock-up	ON		OFF	
gear position	3 *3	O/D	3 *3	O/D
auto power snow	56~62	55 ~ 61	55~61	54 ~ 59

6

A340H (1JZ-GE)

[km/h]

Throttle valve opening		全 開			all closed		Fully open		
shift point		1→2	2→3	3→O/D	3→O/D	O/D→3	O/D→3	3→2	2→1
D.	normal power	49 ~ 62	97~106	149 ~ 160	34 ~ 39	19-24	143~151	89~95	40~45
2	normal power	49~62 *1	—	—	—	—		93~99 *2	4045 *1
L.	normal power	—	—	—	—	—	—	—	51-56 *2

*1:2 Since the range power pattern is fixed at 2nd, 12 no shift

*2: Same when the throttle valve opening is 0%

Lock-up point (at 5% throttle valve opening) [km/h]

Lock-up	ON		OFF	
gear position	3*3	O/D	3 *3	O/D
normal power	56 ~ 62	53 ~ 58	51 ~ 56	51 ~ 56

*3: Only when the O/D switch is OFF (O/D prohibited)

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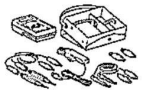
Preparation

product

instrument

	09082-00012	toyota electrical tester	For each part point
	(09083-00060)	mini test leads	For inspecting the connector
	09843-18020	Diagnosis check wire	For short-circuiting the diagnostic connector
	09991-50100	Toyota Diagnosis Reader set	For diagnostic code reading
	09991-50320	Program IC card engine system 3	For diagnostic code reading
S2000 set 09991-60100		57302	for reading computer data
S2000 program card 09991-60200		57303	for reading computer data
oscilloscope		20501	for computer inspection

Fats and oils Other

Valve (12V-21W)	54306	For linear solenoid inspection

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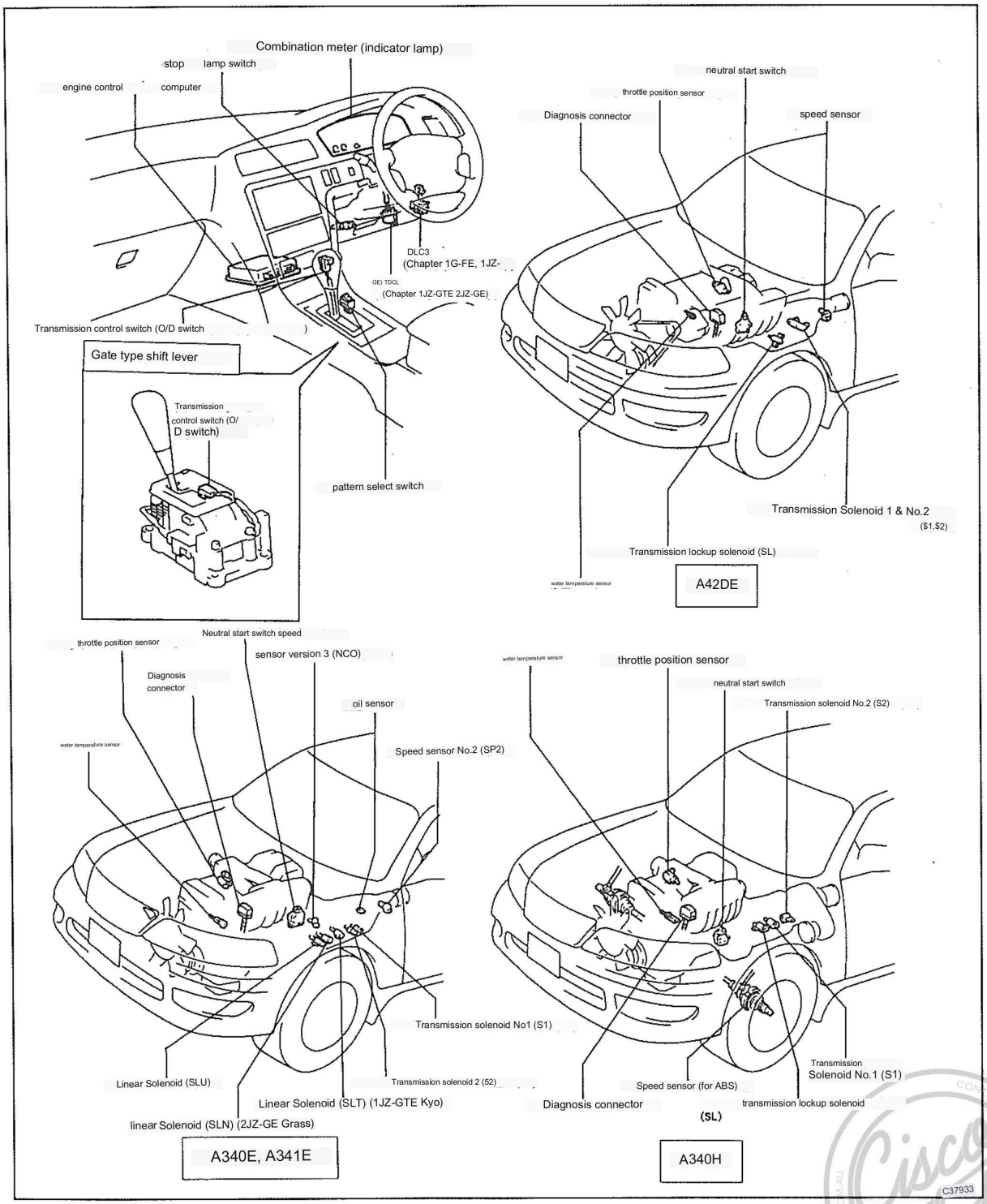
parts layout



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List of sensors and actuators used

item \ engine type / A/T model		2JZ−GE	1JZ-GTE	1JZ-GE		1G−FE
		A340E (ECT−iE)	A341E (ECT−iE)	A340E (ECT−E)	A340H (ECT)	A42DE (ECT)
ECT solenoid	S1	○	○	○	○	○
	S2	○	○	○	○	○
Lockup Solenoid (SL)					○	○
Linear Solenoid (SLU) (for lockup)		○	○	○		
Linear solenoid (SLN) (for clutch engagement hydraulic control)		○				
Linear solenoid (SLT) (for line pressure control)			○			
Throttle position sensor (VTA)		○	○	○	○	○
Water temperature sensor (THW)		○	○	○	○	○
Oil temperature sensor (OIL)		○	○	○		
Input speed sensor (NCO)		○	○	○		
Output speed sensor (SP2)		○	○	○		○
engine speed sensor	G	○	○	○	○	○
	NE	○	○	○	○	○

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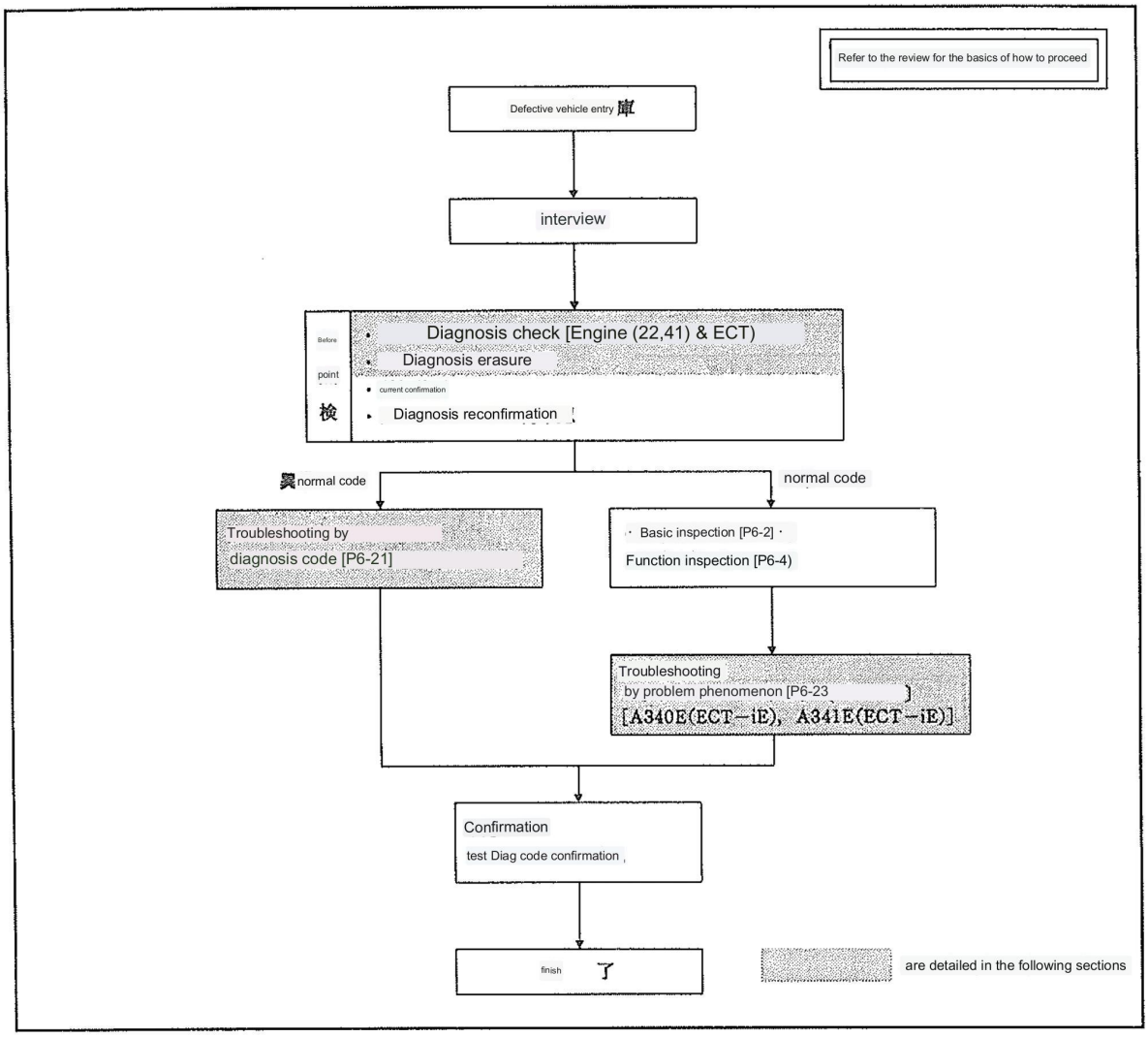
Troubleshooting How

to proceed with troubleshooting



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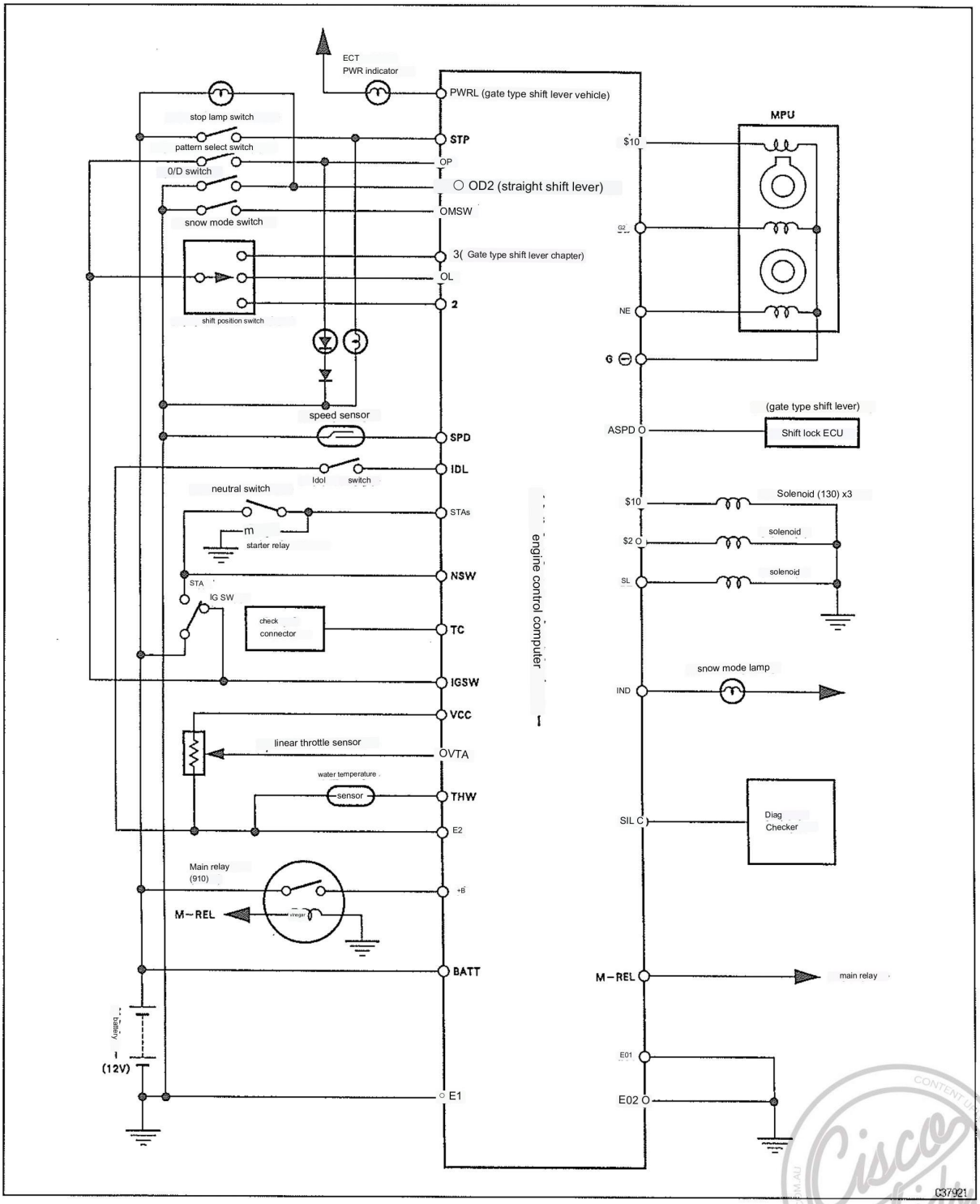
ECT external wiring diagram (outline)

A42DE (1G-FE)



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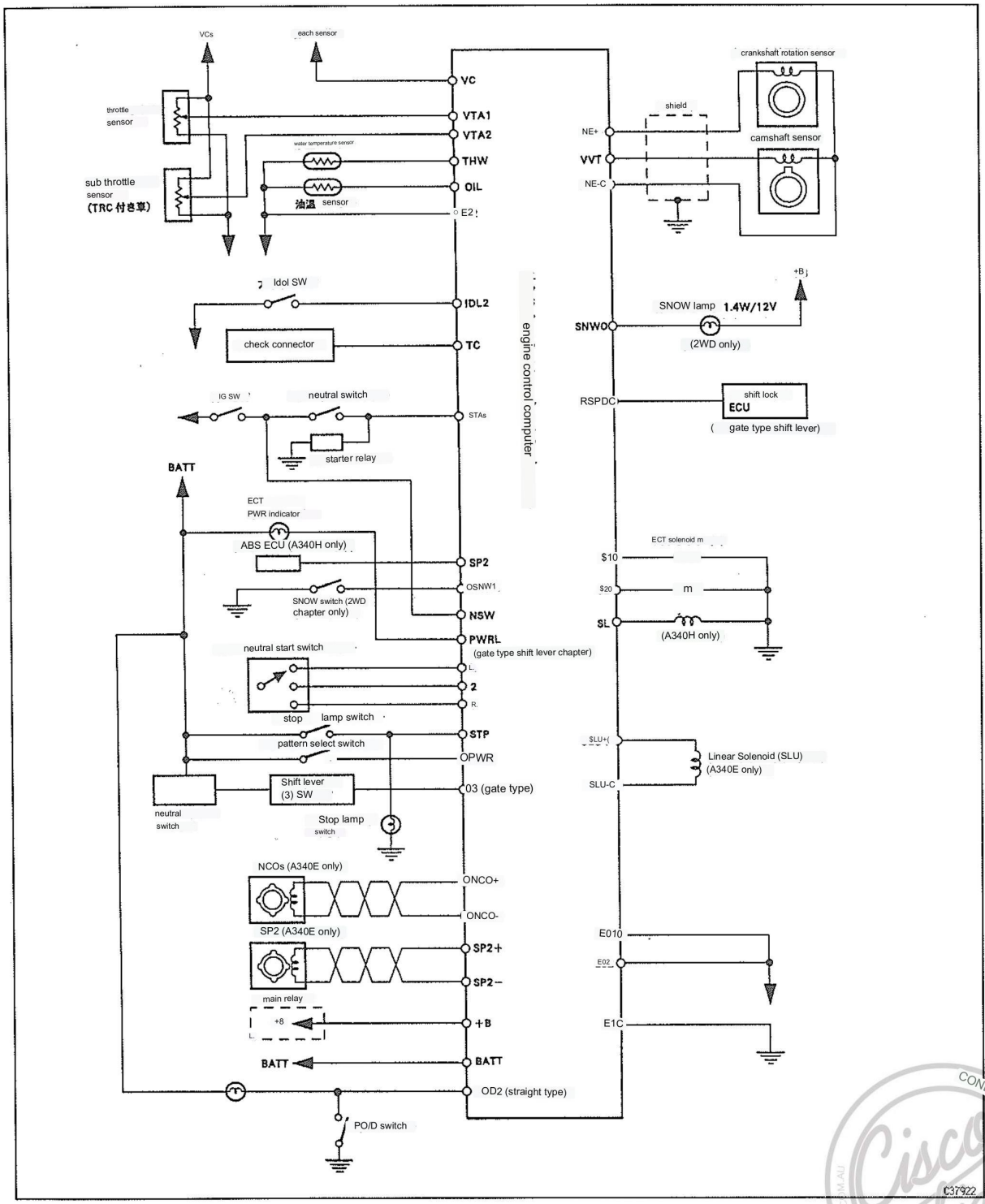
A340E（1JZ−GE), A340H（1JZ−GE)



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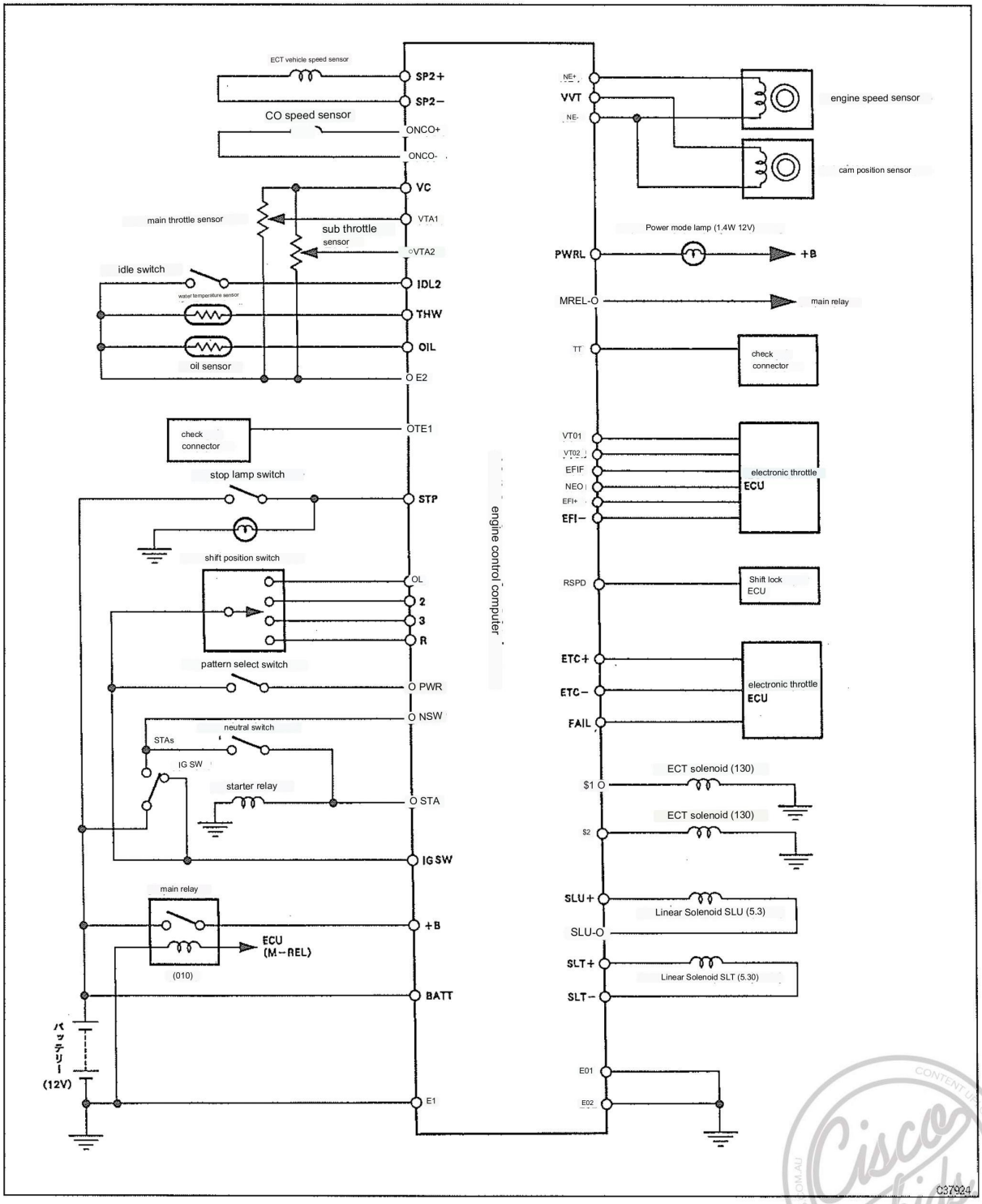
A341E (1JZ-GTE)



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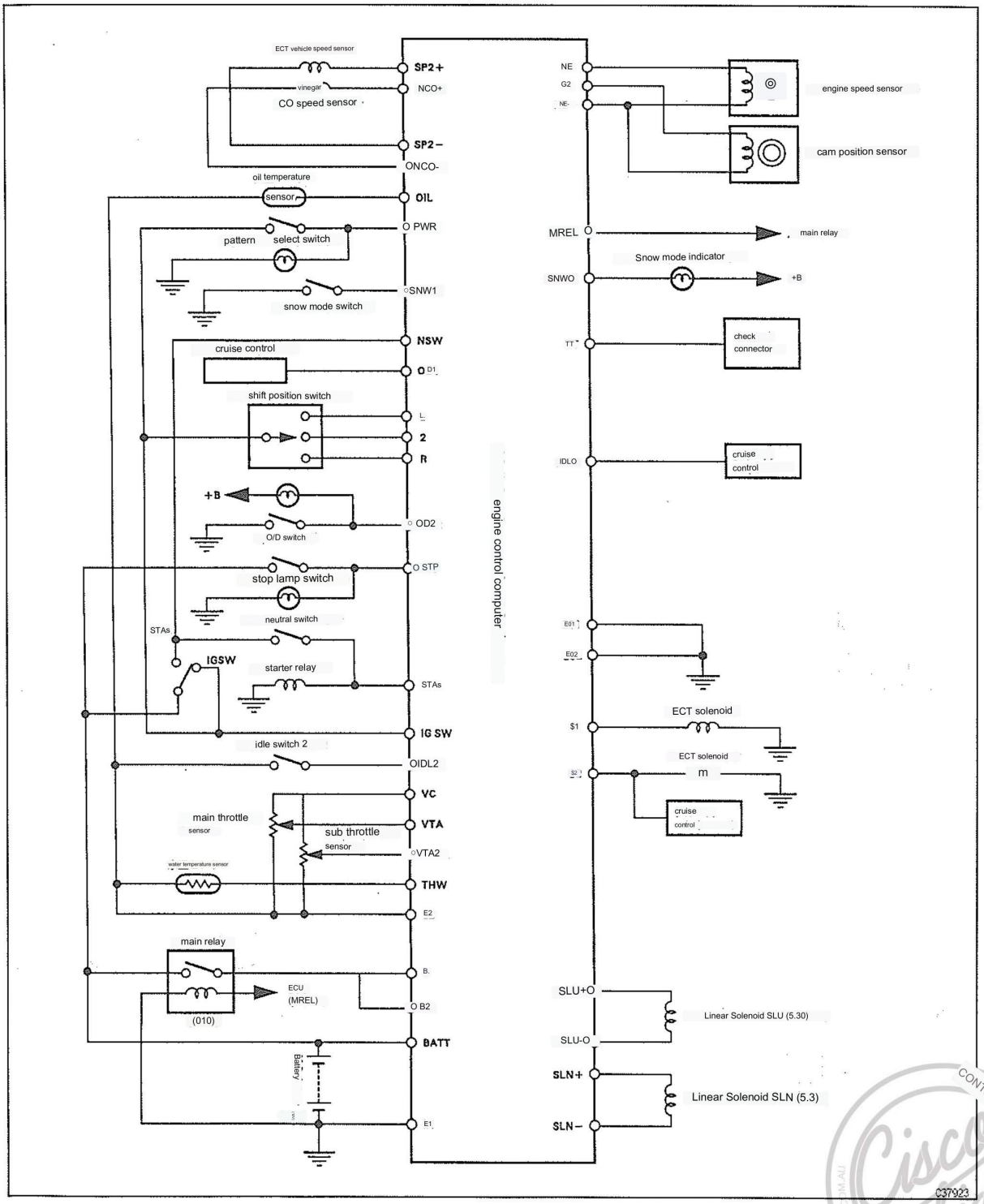
A340E (2JZ-GE)



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Diagnosis check

Diagnosis code reading

1 code reading

•Select the procedure from the table below and read the code according to the instructions.

Inspection method \ engine type		2JZ−GE	1JZ-GTE	IJZ-GE		1G−FE	required distribution
	A/T model	A340T (ECT−iE)	A341E (ECT−iE)	A340E (ETC−E)	A340H (ECT)	A42DE (ECT)	
indicator lamp	TE1 shorted	○	○	X	X	×	Procedure 1
	Tc short	X	X	○	○	O	
diagnostic tool		X	×	○	○	O	Connect the diagnostic tool to DLC3 and read the code according to the screen operation.
Diagnosis Reader		○	○	×	×	×	Point 2;

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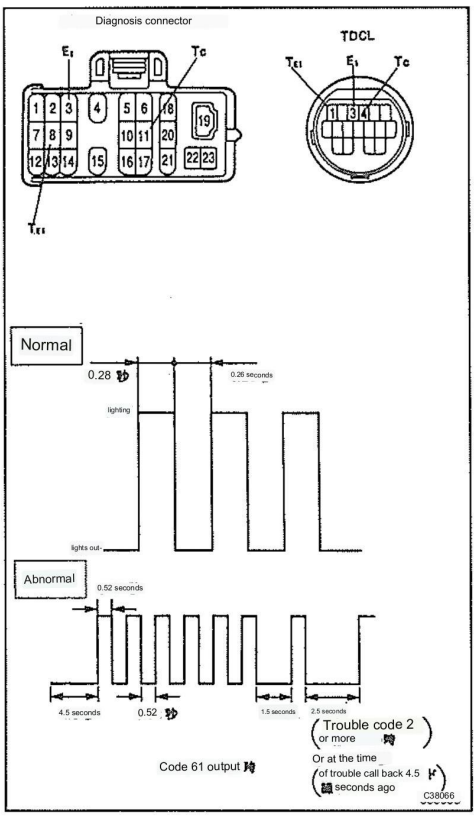

Procedure 1

•The output lamp differs depending on the shift lever type.

Straight type... O/D OFF lamp

ゲート式……ECT PWR

1 TEE, (Diagnosis Connector) or TEL (TDCL) short circuit

• is indicated in the table above.

2 Ignition switch ON

· Read the number of times the lamp blinks*.

*When the light is always on, switch (O/D OFF switch or power switch) turn select switch) to turn off the light.

Point 2

1 Connect the diagnostic reader to TDCL Connect

2 the power plug of the diagnostic reader to the cigarette lighter connected to the

3 Ignition switch ON 4

Enter engine system code

<Reference> · Engine system code

1JZGTE 800

2JZ-GE 818

5 Read the code according to the screen operation.

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code number		Diagnostic system	Diagnosis content	mismatch phenomenon	Inspection part	lamp	code output				
SAE	lamp	[Terminal symbol]	(1) Diagnosis content (2) Abnormal state (3) Abnormal period			point	A340E (2JZ-GE)	A341E (1JZ-GTE)	A340E (1JZ-GE)	A42DE (1G-FE)	A340H (1JZ-GE)
P0710	38	Oil temperature sensor system signal [OIL]	② Short circuit or wire breakage in the oil temperature sensor system ③ Continuously for 0.5 seconds or longer	· Flex lockup control failure ⇩ large fuel consumption	· Wire Harness and Connector (oil temperature sensor system) · Oil temperature sensor ·Engine control le computer	○	○	○	○	×	×
—	46	Clutch engagement hydraulic control ② Linear solenoid (SLN) times linear solenoid system signal ③ Continuous for 1 second or longer [SLN+, SLN−]	Short-circuit line (SLN)	· clutch engagement hydraulic pressure Poor control ↓ Large shift shock	· Wire harness and and connector (SLN system) · Linear solenoid (SLN) Engine control computer	×	○	×	×	×	×
P0500	61	Speed sensor system signal (1) When driving (Do not shift up to O/D other than [SPD: A42DE only) speed sensor No.2 system signal (SP2+, SP2-: other than A42DE)	30 seconds after shift) fail (2) Speed sensor signal input is changed by NE or NCO) 3) The state of 2) is more than 1 second	/ P, N range Speed sensor時 At this time, the 3 O/D up is set to the high vehicle speed side, so it does not shift up to \O/D.	wiring harness and and connector · (speed sensor · Speed sensor (A42DE for ABS) · Speed sensor No.2	○	·	○	○	○	○
P0753	62	Transmission ① When IG switch is ON Solenoid No. 1 system signal ② Solenoid No. 1 short circuit, [S1]	Memorize ③ the code with one break, and decrement the indicator with eight consecutive breaks	· Shift failure (D Ren 3rd 彡時 gear start) Failsafe for details See [P6-23]	· Wire harnesses and connectors (S1 system) · Transmission solenoid No.1 · Engine control computer	○	○	○	○	○	○
P0758	63	Transmission ① When IG switch is ON Solenoid No.2 system signal ② Solenoid No.2 short circuit, [S2]	disconnection ③ Memorize the code once and blink the indicator 8 times in a row	Bad Shift (D Len 2nd and 3rd gear not engaged) Refer to Fail Safe [P6-23] for details.	· Wire harness and connector (S2 system) · Transmission solenoid No.2 · Engine control le computer	○	○	○	○	○	○
P0773	64	Lock-up solenoid ① When IG switch is ON id system signal [SL]	② Lockup solenoid circuit short wire ③ Memorize the code once	• lockup control defective ↓ large fuel consumption	· Wire harness and and connector (SL system) Lockup solenoid ldo · Engine control computer	○	×	×	×	○	○

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code number SAE	code number lamp	diagnostic system [Terminal symbol]	Diagnosis content (1) Diagnosis content (2) Belt condition (3) Abnormal period	Defect phenomenon	Inspection part	lamp light	code input A340E (2JZ-GE)	A341E (UZ-GTE)	A340E (UZ-GE)	A42DE (1G-FE)	A340H (IJZ-GE)
P0715	67	Speed sensor ① 1st, 2nd, and 3rd speed complete No.3 system signal [NCO+, NCO-]	Between after and next shift output, Output speed (NO) 1000r/minE ② Input rotation speed (NCO) ON Force is less than 300r/min ③ 2 trips over 4 seconds	· Engine torque control defective · Flex lock Up control failure ⇩ Large shift shock	wire harness and and connector (Speed sensor No.3 system) · Speed sensor No.3 •Transmission solenoid No.1, No.2*1 · Engine control computer	○	○	○	○	×	×
P1755	68	lockup control linear solenoid circuit Near solenoid short circuit, disconnection (SLU) system signal ③ Continuous for 1 second or longer [SLU+, SLU-]		• lockup control Defect · Flex lockup control failure ⇩ Large shift shock Large fuel consumption	· Wire harness and and connector (SLU system) · Linear solenoid (SLU) · Engine control le computer	×	○	○	○	×	×
—	77	Line pressure control linear ① When the SLT signal is less than 90% Solenoid (SLT) duty ratio output system signal (SLT+, SLT-]	2 Linear Solenoid (SLT) Short circuit, disconnection of the circuit ③ Continuous for 1 second or longer	· Large throttle pressure ↓ Large shift shock	· Wire harness and and connector (SLT system) · Linear solenoid (SLT) • engine control le computer	×	×	○	×	×	×
—	89	Electronic throttle communication ① Throttle control Line system signal 〔ETC+, ETC−〕	computer is normal ② Short circuit or disconnection of the communication line input from the throttle control computer ③ 5 seconds or longer	Defective shift point	· Wire harness and and connector (throttle control roll computer system) · Throttle control le computer •Engine control le computer	○	×	○	×	×	×
		electronic throttle system system signal [EFI+, EFI-]	2 throttle control Communication line for computer output short circuit, disconnection ③ 5 seconds or more								

*1: If the solenoid fails and leaks to the diagnostic, 67 may be pushed out.

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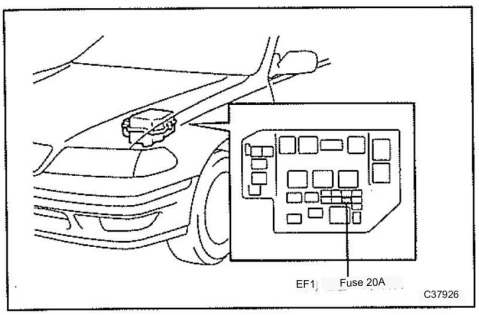


3 Memory deletion of diagnosis code

(Reference) The memory of the next diagnostic vehicle can be easily erased with a diagnostic tool.

be. (1)

Remove the fuse shown in the figure for at least 10 seconds to clear the memory of the code.

be.

(2) After erasing, check the output of normal code.

If an error code is output, repair it again according to the code.

conduct.

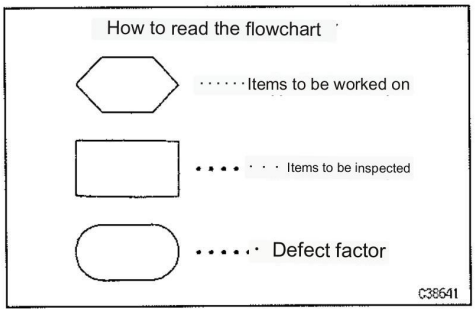
4 Fail-safe function

・ In case of ECT solenoid failure, fail-safe is performed as shown in the table below.

6

Abnormal state	Abnormal treatment method	Details of fail-safe (□ indicates solenoid ON)		
		D-range	2 range	L range
ECT solenoid (S1) malfunction	Controlled by S2	BO/D	[1]	1+2
ECT solenoid (S2) malfunction	Controlled by S1	[1] ↔ O/D	[1] +3	[1]
ECT solenoid (S1, S2) malfunction	Manual operation only	O/D	3	1

* Varies with vehicle speed



TR3133

Troubleshooting by problem symptom (2JZ and 1JZ-GTE A/T only)

・ This troubleshooting is for when no abnormalities are found in basic inspection [P6-2] and function inspection (excluding test run) [P6-4].・ Grasp the phenomenon from the results of the test run [P6-8] and set it to the relevant item.

Check it out.

Defect phenomenon	Reference page
Impossible to shift	6-24
Defective shift point	6-25
bad shift	6-26
Do not shift to O/D	6-27
no lock up	6-28
without unlocking	6-29
Large shift shock	6-30
Flex lockup not working	6-31

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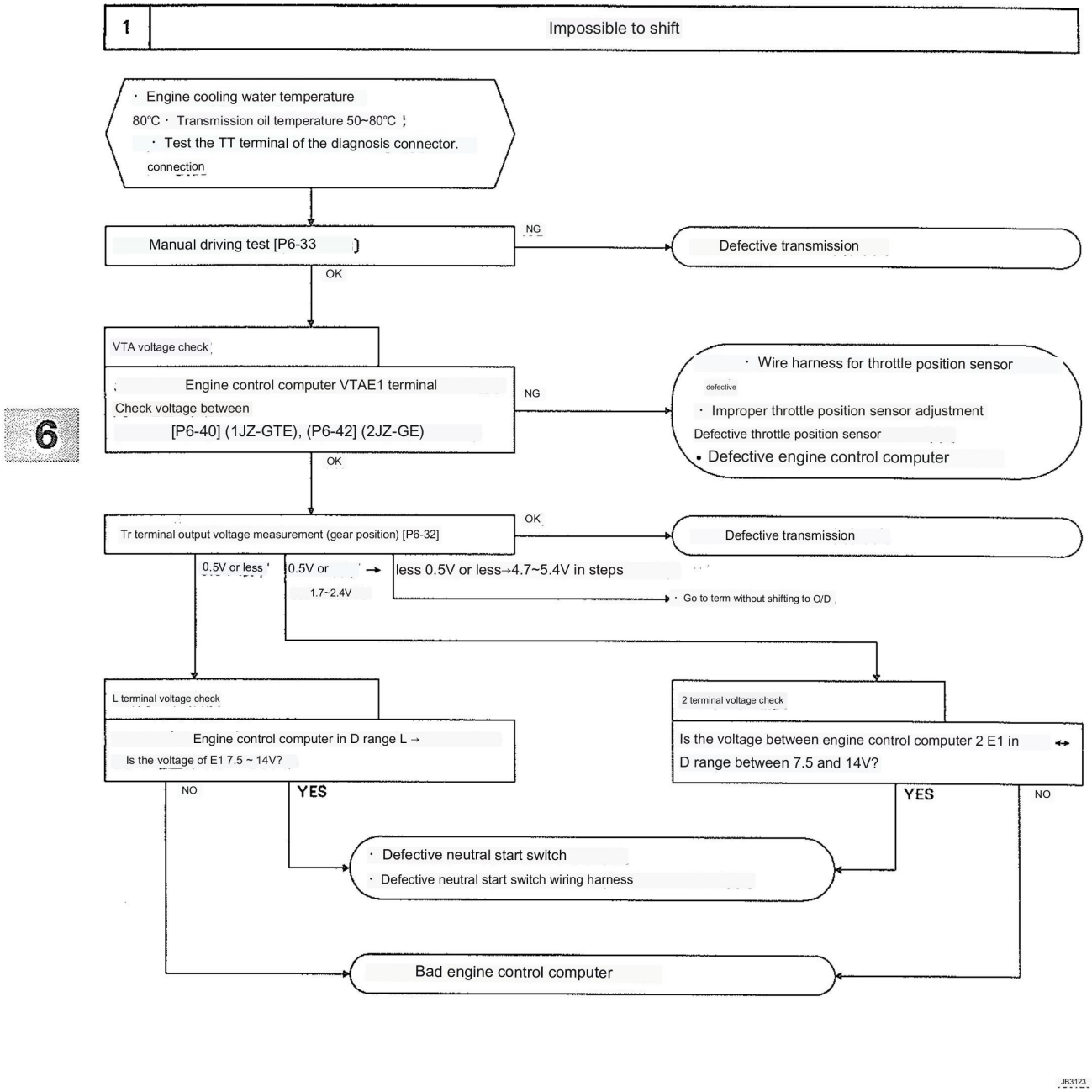

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2	Strange point defective

•Engine machine cooling water temperature 80℃ ;
· Transmission oil temperature 50 to 80℃ · Check the TT terminal of the diagnosis connector. connection

VTA voltage check (throttle position sensor)

Check the voltage between the engine control computer VTAE1 terminals [P6-40] (1JZ-GTE), (P6-42) (2JZ-GE)

NG → · Wire harness for throttle position sensor defective
· Improper throttle position sensor adjustment
· The throttle position sensor is defective.
• Bad engine control computer

OK

Pattern select switch input code check

The voltage of the following terminal of the engine control computer Inspection to

terminal pattern	normal snow *		1 power
SNW ↔ E1 *1	9 ~ 14V	0~3V	9 ~ 14V
PWR ↔ E1	0 ~ 1.5V	0 ~ 1.5V	7.5~14V

*1: A340 (ECT-iE) car

NG → · Defective pattern select switch [P6-34]
Defective wiring harness for pattern select switch

OK

Speed sensor input signal check

Engine control computer SP2, or [P6-40] Check SP1 input signal (1JZ-GTE), (P6-42) (2JZ-GE)

NG → Defective speed sensor [P6-35] ·
Defective speed sensor wire harness

OK

Bad engine control computer

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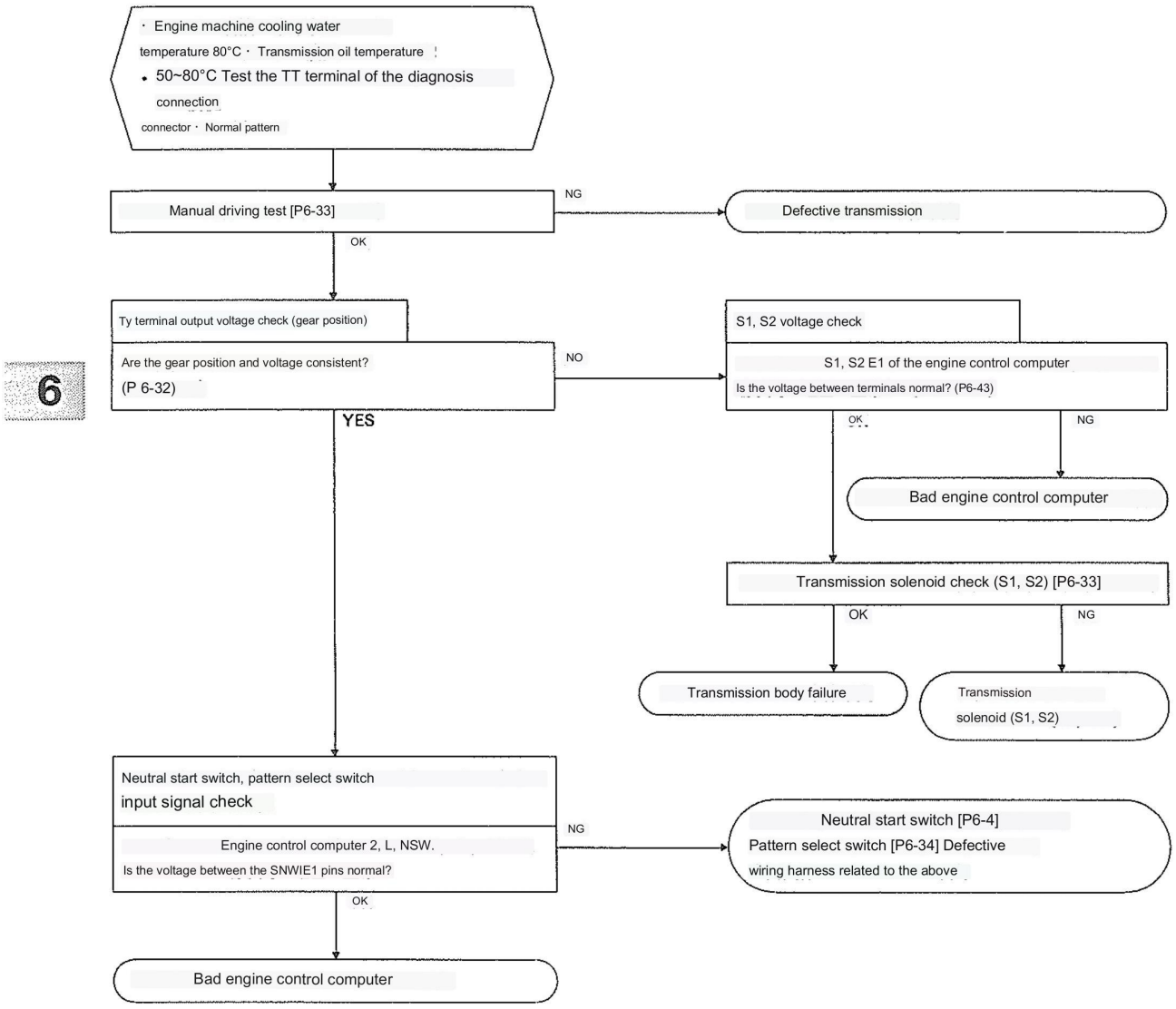
3 Incorrect shift (2nd or 3rd speed start, operation other than the shifted range)



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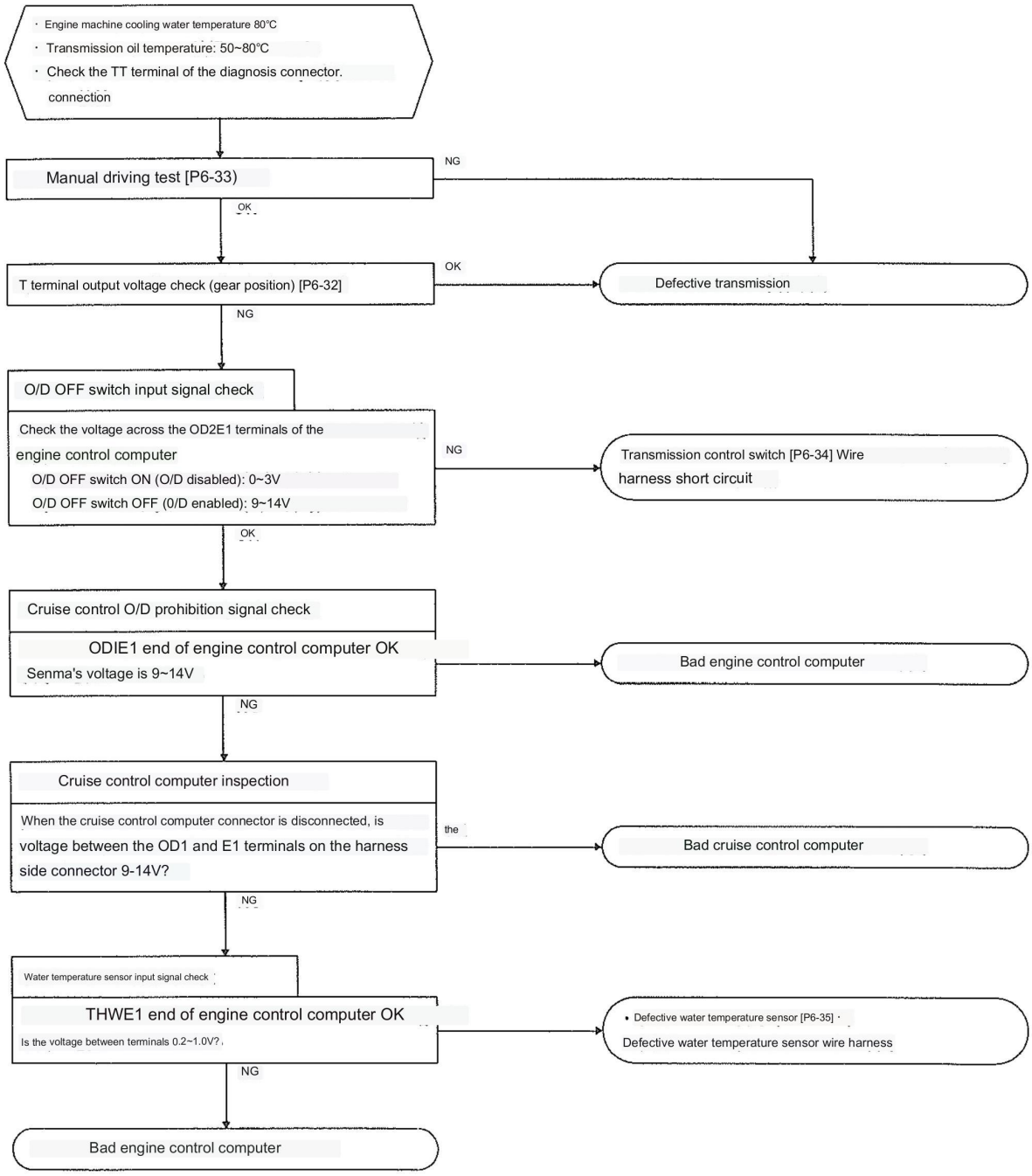
4	Do not shift to O/D



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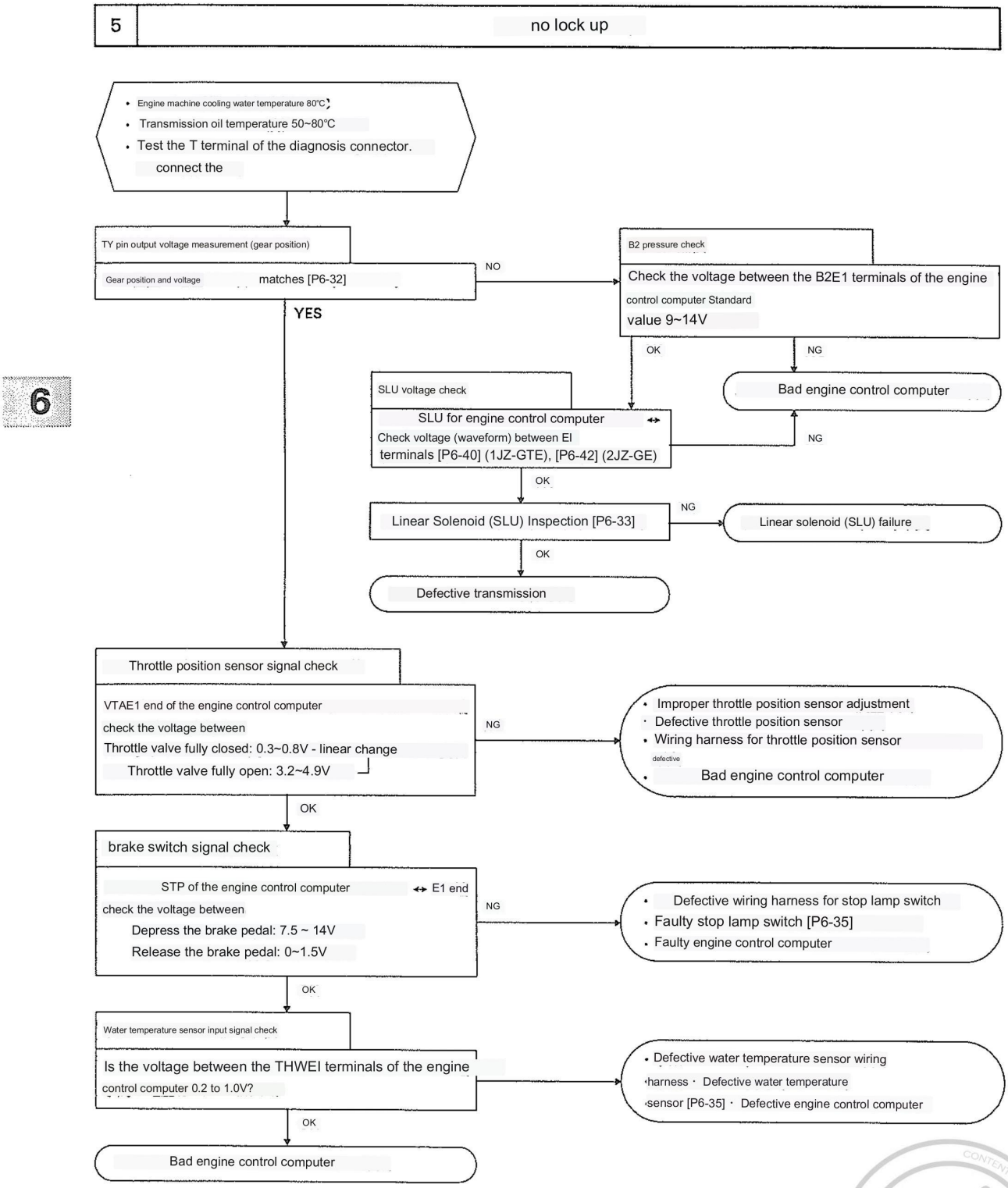

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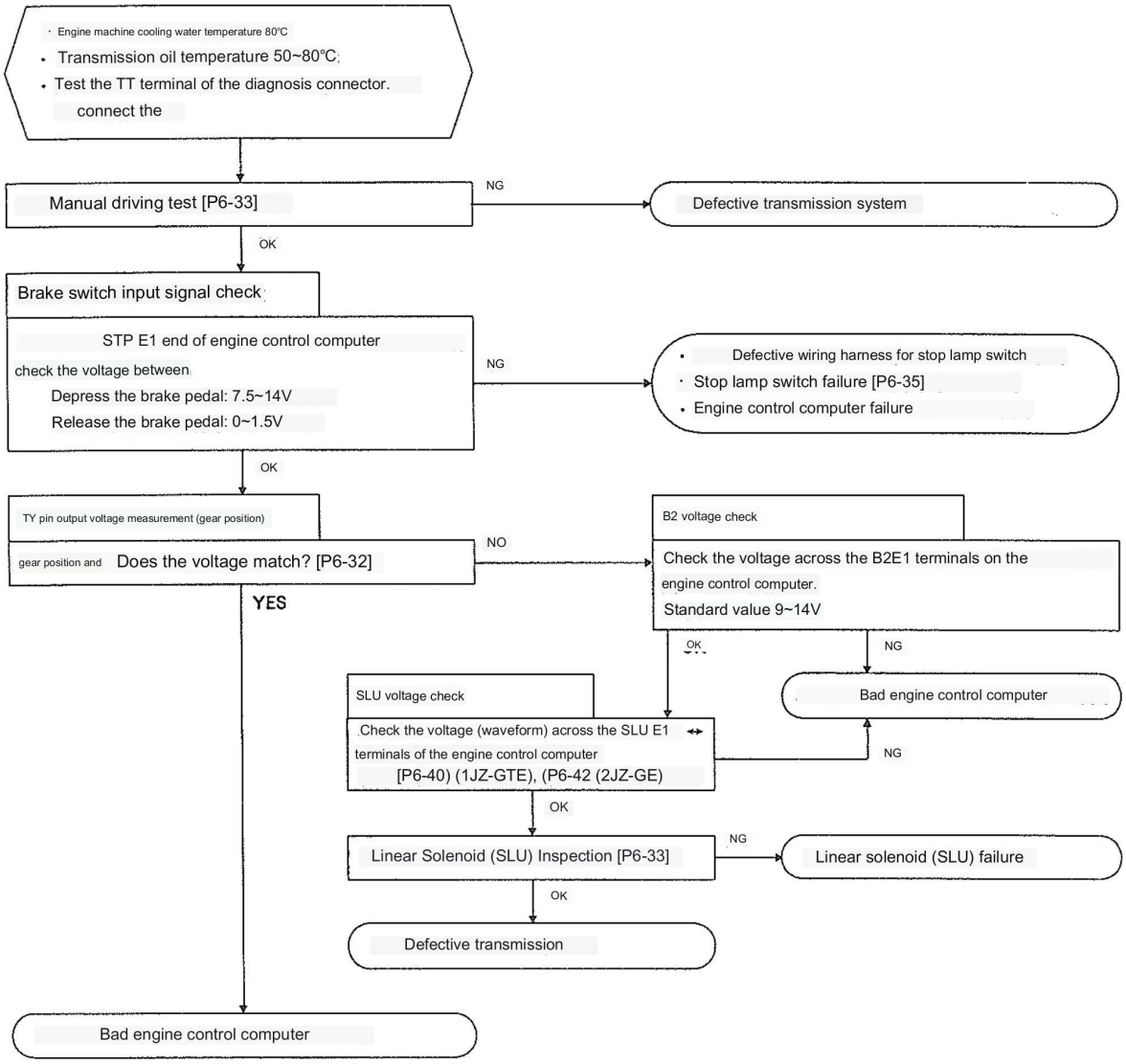
6	without unlocking



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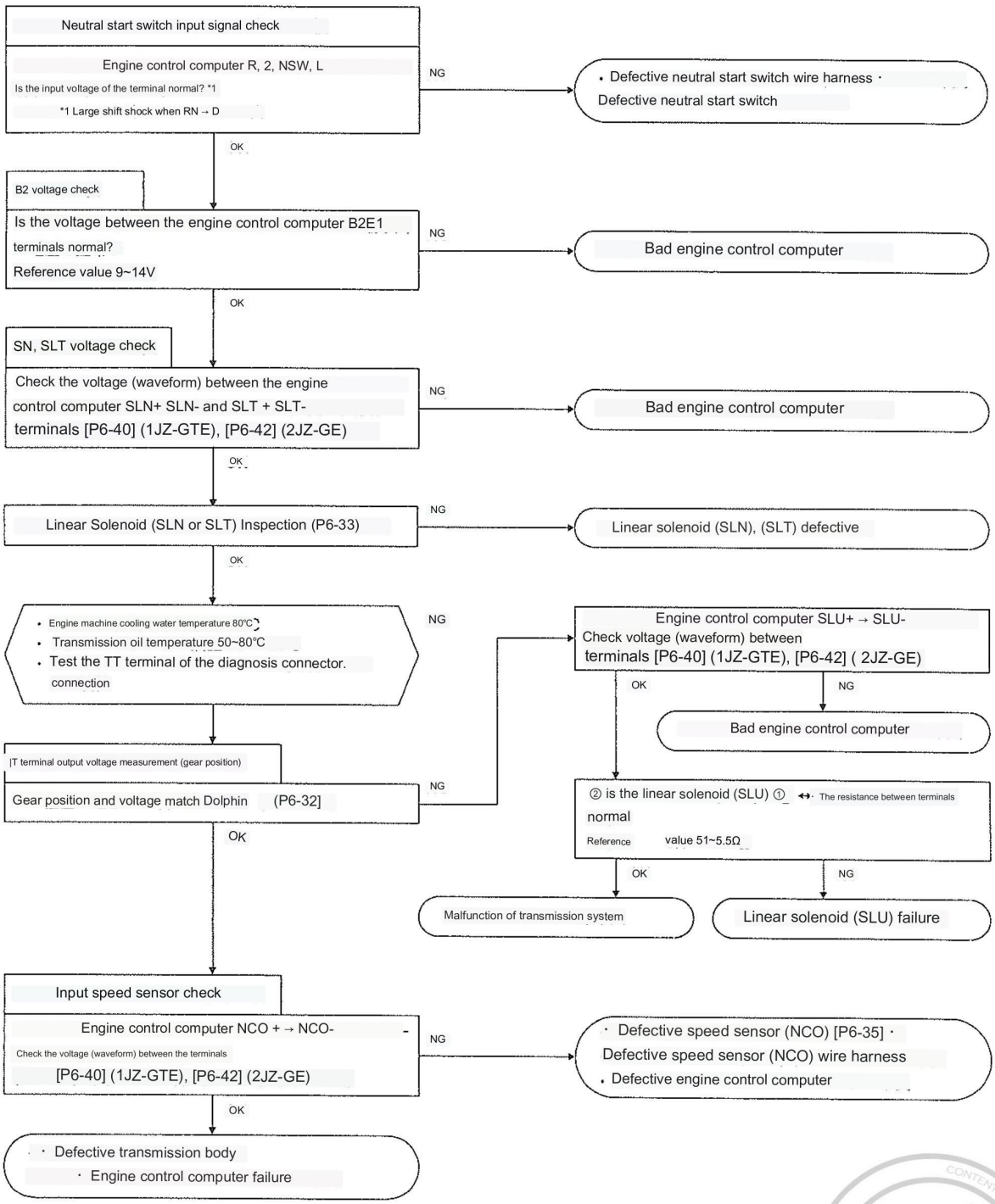
7 Large shift shock



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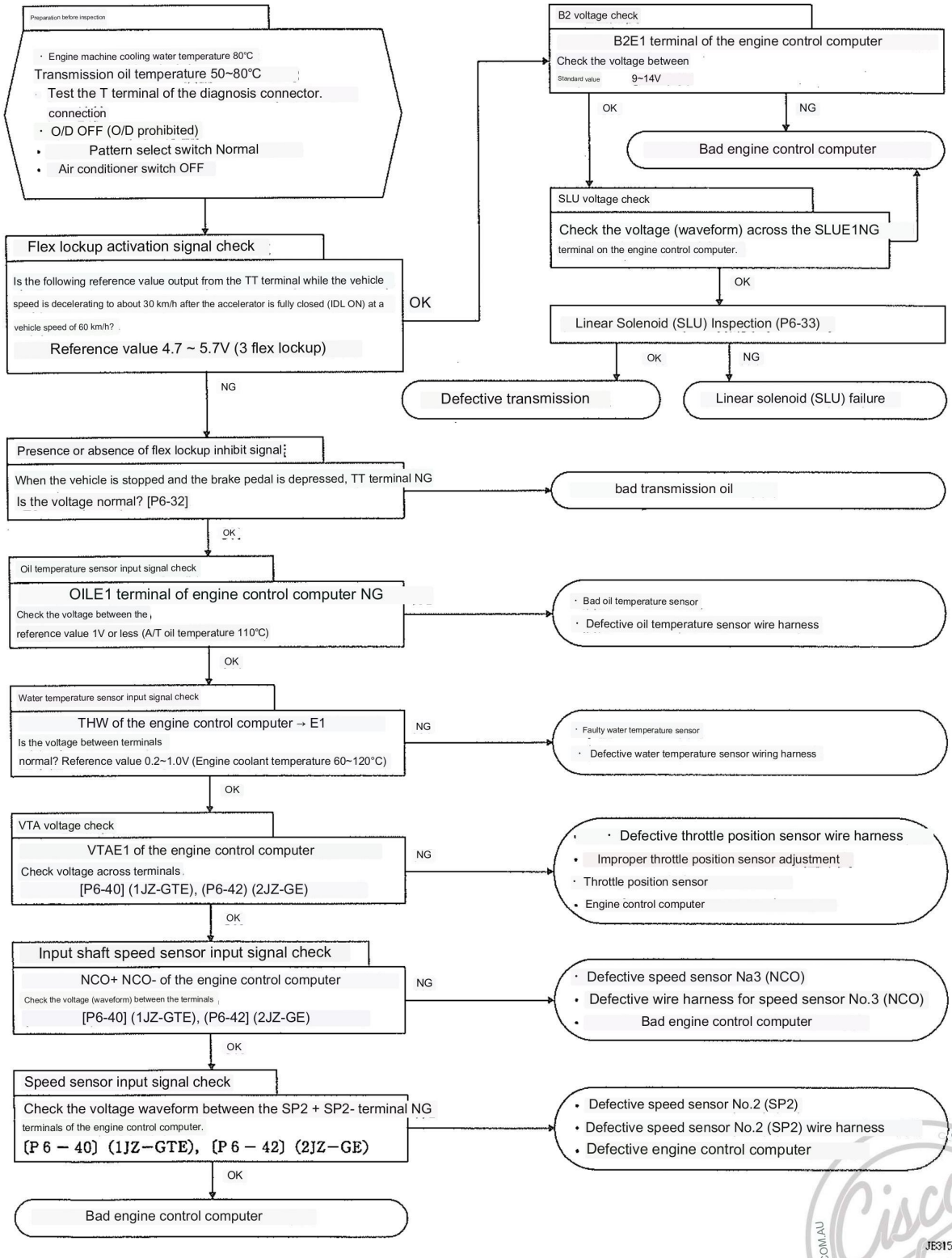
8 Flex lockup not working



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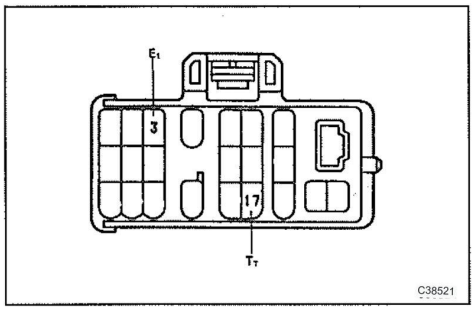


T terminal output voltage measurement

1 Pre-measurement preparation

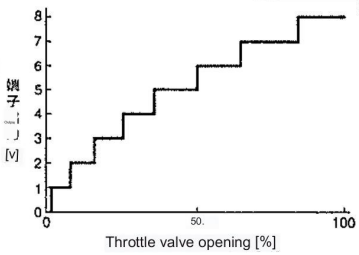
(1) Connect the tester terminal to the T terminal of the diagnosis connector,

E, Connect the terminal of the tester to the terminal.

2 T, terminal output voltage measurement

(1) The following items (ECU control value) can be grasped from the T. terminal output voltage.

be.

Inspection items	Item description	inspection conditions	Inspection details	Check items for abnormalities
throttle position sensor	IG switch ON cell opening and	vehicle stop,	actual access Compare TT output voltage value do  	VTA voltage check OK · Engine control computer · TT output terminal wire hardware Ness NG · Throttle position · Wire harness for throttle position sensor system
stop lamp switch	Presence/absence of stop lamp switch input		When stepping on the brake from the accelerator fully open state Check TT output voltage Defective brake switch with voltage HI 2~3V: Flex lockup disabled state 0.5V or less: Normal	STP voltage check OK ▪ Engine control computer · TT output terminal system wiring harness NG · Stop lamp switch · Stop lamp switch wiring harness
Flex lockup inhibit output	ECU flex Indicates lockup prohibition judgment status			A/T oil dirty ↓ Replace
gear position	The vehicle speed is 10km/h as determined by the ECU.		Compare and check the actual gear position and TT voltage value.	Troubleshooting by phenomenon — to Ting [P6-23]

Gya's state	TT pin output state [V]
1st gear	0.5 or less
2nd gear	1.7 2.4
3rd gear	3.7 4.4
3rd gear lockup	4.7 5.4
O/D	5.7 6.4
O/D lockup	6.7 7.4

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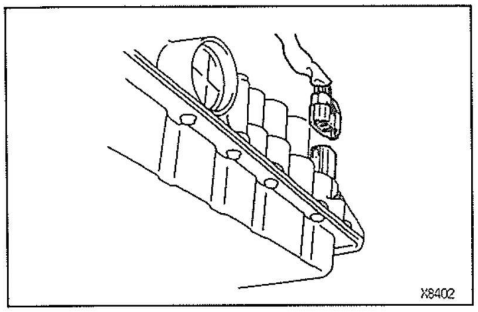


manual drive test

1 manual drive test

(1) Disconnect the transmission solenoid connector. (2)

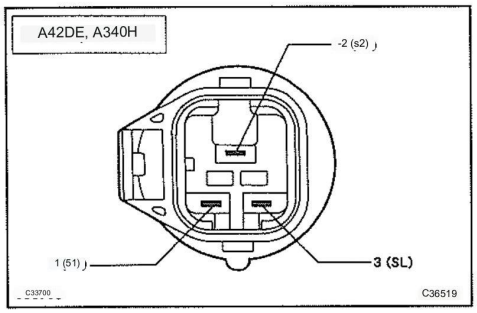
Whether or not the gear is shifted to a gear that matches each range while driving.

inspect.

standard

shift lever position	D-range	2 ranges	L range
Gaposition	O/D	3速	1st gear

T0049085



Unit inspection

transmission solenoid

1 Check transmission solenoid

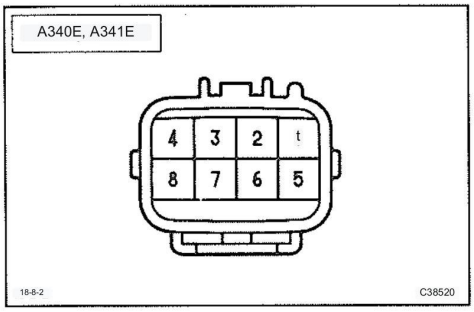
A42DE, A340H

(1) Disconnect the transmission solenoid connector. (2) Connect the battery to each terminal of the solenoid connector + the battery to the body.

Connect the battery and check the operation sound of each solenoid. (3)

Measure the resistance between each terminal of the solenoid connector and the body ground do.

Standard value 11~15Ω



A340E, A341E

(1) Disconnect the transmission solenoid connector. (2) Connect the battery to the 4 (S1) or 8 (S2) terminal of solenoid connector A and the battery to the body, and check the operation sound of each solenoid.

(3) Measure the resistance between the solenoid connector A4 (S1) and 8 (S2) terminals and the body ground.

Standard compensation 11~15Ω

(4) Measure the resistance between terminals 37 (SLU) and 26 (SLN or SLT)* of solenoid connector A. Standard

*: 2JZ-GE car····· SLN 1JZ-GTE car····· SLT

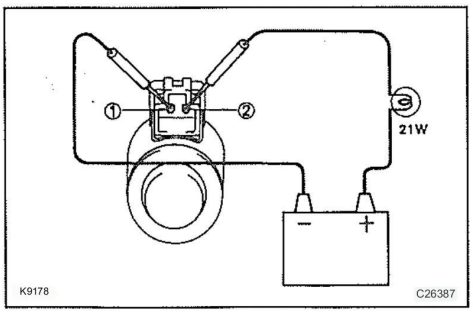
value 5.1~5.5Ω

2 Inspection of transmission solenoid unit

(1) Connect the battery to each solenoid terminal and the battery to the body. Next, check the operation sound of the solenoid.

(2) Check the resistance between each solenoid terminal and the body.

Standard value 11-150



3 Inspection of Linear Solenoid

Single Unit (1) Connect the battery to the terminal ② via a 12V-21W valve, and check that the valve inside the solenoid moves when the battery is connected to the terminal ①.

(2) Check the resistance between terminals ①→②.

Reference value 5.1~5.50

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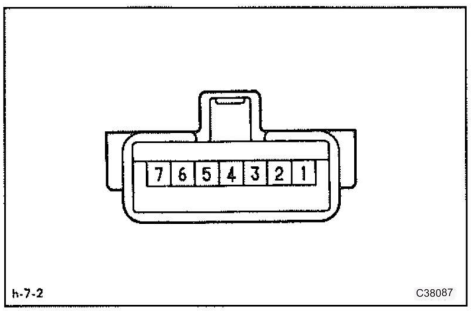


pattern select switch

1 Check continuity and night

light (1) Check continuity and night light between terminals.

A341E, A340H

standard; There is ○○ lead ○-(0)-○ With valve

Select position \ ID	5	6	2	4
power	○—○			
normal			○-(0)-○	

A42DE, A340E

standard ○○ Continuity ○-(0)-○ With valve

Select position \ ID	5	7	1	3	2	4
power	○—○					
normal or auto					○-(0)-○	
snow			○—○			

If the snow button is kept pressed, the ON state will not continue.

JB3563

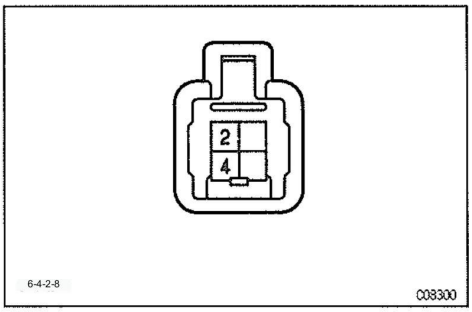
6

transmission control switch

straight shift lever

1 Check transmission control switch

(1) Disconnect the transmission control switch connector and check the continuity between the 24 terminals. Criteria Control switch ON … No continuity
Control switch OFF … Continuity



Gate type shift lever

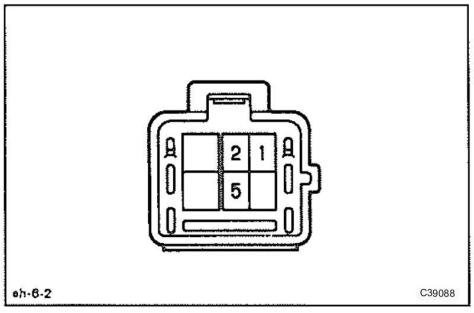
1 Transmission control switch inspection

(1) Connect the transmission control switch connector detach. (2)
Check continuity between terminals.

○—○ Continuity

shift lever position \ ID	1	2	5
3 ranges	○—○		○—○
Other than 3 range		○—○	○—○

JE3699



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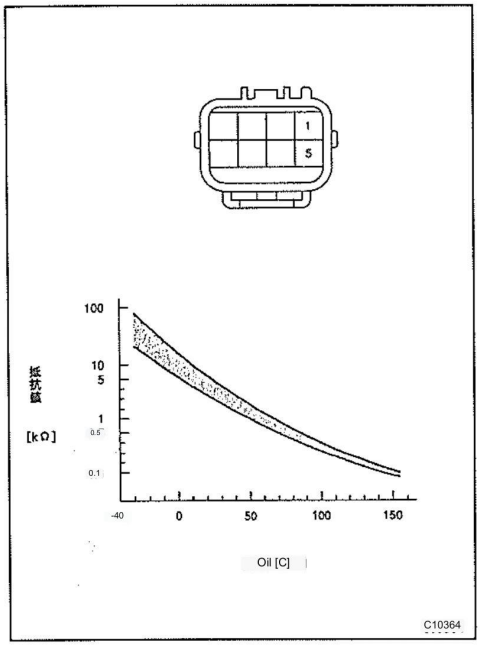

oil temperature sensor

1 Terminal resistance check

(1) the resistance between the 15 terminals of the transmission wire connector

Measure.

Criteria Refer to graph

6

Speed sensor No. 2, No.3

1 Speed sensor inspection

(1) Measure the resistance between terminals.

Standard value 560~680Ω

water temperature sensor

(See "Engine" - "EFI system" - "Water temperature sensor")

neutral start switch

(Refer to "Basic inspection and adjustment" - "Neutral start switch inspection and

adjustment") Stop lamp

switch (Refer to "Brake" - "Antilock brake system" "Individual inspection")

engine control computer

1 computer check

(1) Using a Toyota Electrical Tester, measure the voltage between

each terminal and body ground.

•Caution · Before measurement, check the power supply (9 to 14V when IG is ON) and ground (when IG is OFF, each ground terminal → 5Ω or less between engine and body).

implement.

· Connect the connector to the computer and check from the back side of the connector.

• If the measurement conditions are not specified, check with the engine stopped and the ignition switch ON.

(2) Using an oscilloscope, a pulse is generated between each terminal

Confirm that

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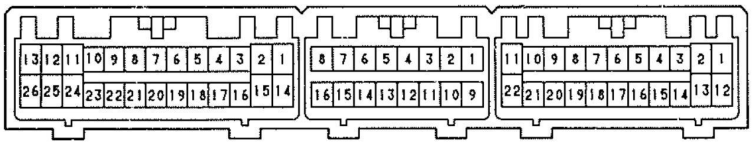
recollection times

A42DE (1G-FE)



Vd-04-2

connector	fistula number	Terminal symbol	input/output	item		reference signal
A.	1	SL[E1]	output	voltage vehicle stop state		0 ~ 1.5V
	2	$1 [E1]	output	yosho	Vehicle stopped, shift lever D range	9~14V(P6-43)
	6 #1	3 [E1]	input	電圧	Shift lever range (O/D permission)	9 ~ 14V
					Shift lever 3 range (O/D prohibited)	0~3V
	13	E01 [body ground]	—	normal	Time	With guiding path
	14	E1 [body ground]	—	導 Normal time		Continuity
	15	$2 [E1]	output	Den-O	vehicle standstill	0~1.5V(P6-43)
	26	E02 [Body Earth]	—	Continuous		with guidance
B.	1	VCC [E1]	output	yosho	Engine off, ignition switch ON	4.5 ~ 5.5V
	4	THW [E1]	input	electricity	Engine coolant temperature 60~120°C (when warmed up)	0.2 ~ 1.0V
	9	E2 [Body Earth]		導 Normal time		with guidance
	10	2 [E1]	input	Zhuangzhuang	Shift lever 2 range	7.5 ~ 14V
					Other than shift lever 2 range	0 ~ 1.5V
	11	VTA [E1]	input	electricity	Throttle valve fully closed	0.3~0.8V
					Throttle valve fully open	3.2~4.9V
	12	IDL [E1]	input	electricity	Throttle valve fully closed	0~3V
					Throttle valve fully open	9 ~ 14V
	14	SIL[E1]	output	electricity	S2000 is connected to DLC3 and communication is established	pulse generation
	15	TC [E1]	input	Voltage	Engine stop, ignition switch ON	9 ~ 14V
					TcE of diagnostic connector, short circuit between terminals	0~3V
	16	L[E1]	input	Voltage	Shift lever L range	7.5 ~ 14V
					Other than shift lever L range	0 ~ 1.5V
C	1	BATT [E1]	input	At that time		9 ~ 14V
	2	IGSW [E1]	input		Voltage Engine off, ignition switch on	9 ~ 14V
	4	M-REL [E1]	output		Voltage Engine off, ignition switch on	9 ~ 14V
	7	OD2 [E1]*2	input	電圧	Transmission control switch ON (O/D enabled)	9 ~ 14V
					Transmission control switch OFF (O/D disabled)	0~3V
		PWRL [E1]*1			Pattern select switch "POWER"	0~3V
					Pattern select switch "NORM"	9 ~ 14V

[ ] indicates the side of the tester
rod *1: Gate type shift lever vehicle *2: Straight type shift lever vehicle

JBG3143
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コネクター	Terminal number 9	Terminal symbol	"input/output	Item	fixed 条 subject	Standard value
C		SPD［E1］	input	Waveform	Vehicle speed about 20km/h	waveform 1
	12	+B[E1]	input	Den-O	Engine stop, ignition switch ON	9 ～ 14V
	15	STP［E1］	input	electricity	メさ ON	7.5 ～ 14V
					ス Down乂ヘ OFF	0 ～ 1.5V
	16*1	RSPD[E1]	input	yosho	When the engine is idling	9 ～ 14V
	17	MSW［E1］	input	electricity	ハ After the evening, "SNOW" ON	0~3V
					パターンセ1 ㄣメヘ for “SNOW OFF (乂ヘ distance)	9 ～ 14V
	20	IND [E1]	output	電圧	パタ ーKui SNOW" ON	0~3V
					イ 乂ヘ OFF→ON(X/OFF)	9 ～ 14V
	21	P[E1]	input	電圧	パタ "POWER" ON	7.5 ～ 14V
					パタ Ik乂ヘ POWER" OFF	0 ～ 1.5V
	22	NSW[E1]	input	electricity	シフトレバー P, N レンジ	0~3V
					ショutside the gate - other than PNLY	9 ～ 14V

[] ㄗ乂Evening room
side dimensions

JB3152

6

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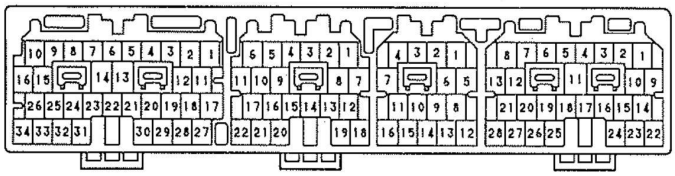
A340E（1 JZ−GE), A340H（1 JZ−GE)



japanese kuyu alone　Kuchimizu Yuyuichi　Yuu Yamaki-C

1-100-2

コネクター	端子番号	terminal princess	input/output	item	fixed Guess subject	Standard value
A.	11	S1 [E1]	output	Den-O car rain stop state, To EEDLE		9〜14V(P6−43)
	14	NSW[E1]	input	Voltage	シフトレバー P, N レンジ	0~3V
					シフトレバー P, N レンジ以外	9 ～ 14V
	17	S2 [E1]	output	voltage vehicle stop state		0〜1.5V(P6−43)
	27*1	SL[E1]	output	Waveform	vehicle standstill	0 ～ 1.5V
	28*2	SLU+ [SLU-]	output	Waveform	When the engine is idling	waveform 2
	33	E02 [ボデーアース]	—	Mizodori	all the time	with guidance
	34	E01 [ボデーアース]		Groove normal		導 there is a way
B.	1	VC[E1]	output	Voltage	"Stop Seosha, this evening ー弓`メ乀 チ ON-	4.5 ～ 5.5V
	7	VTA1 [E1]	input	electricity	Throttle valve fully closed	0.3~0.8V
					Throttle valve fully open	3.2~4.9V
	9*2 (B4)	SP2＋ [SP2ー]	input	Waveform	Car side about 20km/h	waveform 3
	14*2 (B3)	NCO+ [NCO-] | Human power		Waveform Car side approx. 20km/h		waveform 4
	18*2	OIL [E1]	input	電圧	A/T oil section 110℃	1 V or less
	20	THW [E1]	input	yosho	Cooling water temperature 60~120°C (during cold operation)	0.2 ～ 1.0V
	22	E2 [ボデーアース]	—	always		with guidance
C	5	TC [E1]	input	電圧	Engine off, ignition switch ON	9 ～ 14V
					ダイアグノ Short circuit between TE terminals	0~3V
	13	SNW0 [E1]	output	Futzhuang	パタ ー勹メ乀` OWON	0~3V
					イ勹メ乀 OFF ON(Z/	9 ～ 14V
	14	SNW1 [E1]	input	electricity	パタOFF) ーせKuto SNOW ON	0~3V
					パタ ーせ`勹メ乀 SNOW" OFF	9 ～ 14V
	16	E1[朮于-7-7]	—	normal	Time	導通あり

[] 又Yuichiro's day side dimensions
*1: 4WD vehicle *2: 2WD vehicle

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コネクター	ID	Terminal symbol	input/output	item	Measurement condition	Standard value
D.	1*3	RSPD [E1]	Input	electricity	at idle rotation	9 ～ 14V
	2	L[E1]	input	Voltage	Shift lever L range	7.5 ～ 14V
					Other than shift lever L range	0 ～ 1.5V
	3	PWR [E1]	input	電圧	ノ　ㄅ ー せ KURO POWER"	7.5 ～ 14V
					ハ　Evening－ㄩKui "NORM"	0 ～ 1.5V
	6*4	OD2[E1]	input	electricity	トㄋメㄣ业ㄚㄐOne ON (O/D permission)	9 ～ 14V
					ト　5 So ヌ y Yo ㄚ ㄐ ㄐ ー メ ㄟ OFF (O/D prohibited)	0~3V
	7*5	OD1[E1]	input	電圧	ㄅーメ˙One day ㄦㄐWhen 504 speed is requested	0~3V
					ㄅ ー メ ㄚ ㄦ when not operating	9 ～ 14V
	10	2 [E1]	input	electricity	シフトレバー　2 レンジ	7.5 ～ 14V
					Other than shift lever 2 range	0 ～ 1.5V
	12*1	SP2 [E1]	input	Waveform	Vehicle speed 20km/h	waveform 5
	14	BATT [E1]	input	constant voltage		9 ～ 14V
	17	R[E1]	input	electricity	シフトレバー　R レンジ	7.5 ～ 14V
					シ˙ Other than going out RL	0 ～ 1.5V
	18*3	3 [E1]	input	電圧	シ˙　トDVD (C/D allowed)	0 ～ 1.5V
					シ　7-3L (O/D prohibited)	7.5 ～ 14V
	21	SIL[E1]	output	yosho	DLC3 S2000 connection established	pulse generation
	22	+B[E1]	input		voltage source > stop, next = メ ㄟFON	9 ～ 14V
	25	STP [E1]	input	Yuzhuang	Stop lamp switch ON (depress brake pedal)	7.5 ～ 14V
					Stop lamp switch OFF	0 ～ 1.5V

[] メYuichi's dimensions

*1: 4WD car 3: Ichito Yaichi *4 メで`ー Lower type car *5: A car with a small mouth and a small mouth

JE3195

6

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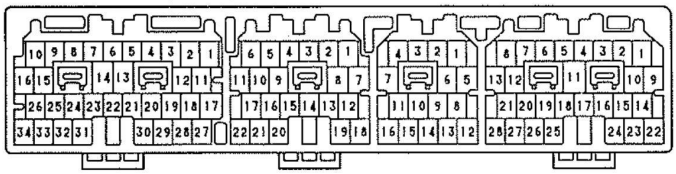
A341E（1JZ－GTE）



Yuu Kuchimizu Alone　　Kuchimizu Kuyu 100　　コネクターC

コネクター	number	terminal princess	"I/O	item	rule	Standard value
A.	1 [A2]	SLT＋［SLT－］	output	Waveform	When the engine is idling	waveform 6
	11	S1 [E1]	output	Voltage both vehicles stopped, full RED レンジ		9～14V(P6－43)
	14	NSW [E1]	input	electricity	シフトレバーP，Nレンジ	0~3V
					シフトレバーP，Nレンジ以外	9～14V
	17	S2[E1]	output	Voltage	car rain stop bear	0～1.5V(P6－43)
	18 [[A27}]	ETC＋［ETC－］	input	Waveform	When the engine is idling	waveform 7
		25 E1 [-7-7]		Groove normal		Continuity
	28 [A4]]	SLU+ [SLU-]	output	Waveform	When the engine is idling	waveform 2
		33 E02 [ホ宁-7-ヌ]	－	lectures always		Continuity
	34	E01［ボデーアース］	－	導通	常　時	Continuity
B.	1	VC[E1]	output	electricity	power stop, イグニッションスイッチ　ON	4.5～5.5V
	7	VTA1 [E1]	input	electricity	Throttle valve fully closed	0.3~0.8V
					Throttle valve fully open	3.2~4.9V
	9 [B4]	SP2＋［SP2－］	input	Waveform	Vehicle speed about 20km/h	waveform 3
	15 [[B3]]	NCO+[NCO-]	input	Waveform at engine idling		waveform 4
	18	OIL［E1］	input	electricity	A/T oil wet 110℃	1 V U below
	20	THW [E1]	input	Circular cooling water temperature ~ 120℃ (during warm-up)		0.2～1.0V
		22 E2 7-7-7]	－	Groove normal time		Continuity
C	2	M－REL［E1］	output	electricity	Engine stop, ignition switch ON	9～14V
	7 [C11]	EFI+ [EFI-]	output	electricity	When the engine is idling	waveform 8

[] is the e-mail size of Yuichi Yuichi

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コネクター	ID	Terminal symbol	input/output	item	fixed 条 subject	Standard value
D	1	TT[E1]	output	pressure	Stop the engine, turn the ignition switch on, and gradually depress the accelerator pedal from the fully closed position.	0.5V or less 7.6 ~ 8.7V step change
	2	L[E1]	input	Voltage	Shift lever L range	7.5 ～ 14V
					Other than shift lever L range	0 ～ 1.5V
	3	PWR〔E1〕	input	electricity	ノ Outside ヌヌ "POWER"	7.5 ～ 14V
					ノ Evening ーㄩㄣメㄟ for "NORM"	0 ～ 1.5V
	6	PWRL〔E1〕	input	Voltage	バタ ーメㄟ POWER"	0~3V
					ノ Evening メㄟ NORM"	9 ～ 14V
	9	IGSW [E1]	input	electricity	Engine off, ignition switch ON	9 ～ 14V
	10	2 [E1]	input	electricity	Shift lever 2 range	7.5 ～ 14V
					Other than shift lever 2 range	0 ～ 1.5V
	14	BATT [E1]	input	pressure	all the time	9 ～ 14V
	15	3 [E1]	input	Voltage	シフ トDDD (0/D enabled)	0 ～ 1.5V
					シ 7-30/D prohibited)	7.5 ～ 14V
	16	RSPD[E1]	input	electricity	When the engine is idling	9 ～ 14V
	22	+B[E1]	input	Voltage	こ Engine off, ignition switch ON	9 ～ 14V
	24	R[E1]	input	電圧	シフトレバー R レンジ	7.5 ～ 14V
					シ Other than outer RLD	0 ～ 1.5V
	25	STP〔E1〕	input	Voltage	スト 2757 ON	7.5 ～ 14V
					27522 I OFF	0 ～ 1.5V

Dimensions on the side of []ヌ1 in the terminal symbol

JB3197

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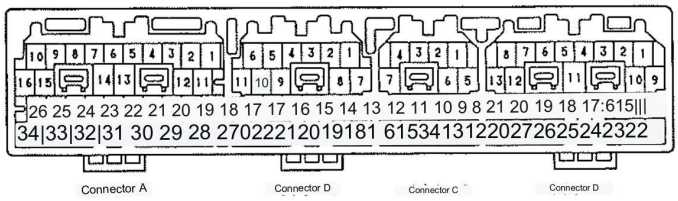
A340E (2JZ-GE)



n-100-2

connector	Terminal number	Terminal symbol	Input/output item			Standard value
A.	13	S1 [E1]	output	Voltage	Vehicle stopped, shift lever in D range	9 ~ 14V (P6-43)
	14	NSW [E1]	input	electricity	Shift lever P, N range	0~3V
					Other than shift lever P, N range	9 ~ 14V
	17	S2 [E1]	output	voltage stop state		0~1.5V (P6-43)
	18 [A3]	SLN+ [SLN-]	output	Waveform at engine idling		waveform 9
	25	E1 [body earth]	—	Mizodori	all the time	with guidance
	28 [A4]	SLU+ [SLU-]	output	Waveform at engine idling		waveform 2
	33	E02 [Body Earth]	—	Continuity	all the time	Continuity
	34	E01 [Body Earth]	—	Conduit always		Continuity
B.	1	VC[E1]	output	voltage engine off, ignition switch on		4.5 ~ 5.5V
	7	VTA [E1]	input	electricity	Throttle valve fully closed	0.3~0.8V
					Throttle valve fully open	3.2~4.9V
	9 [B4]	SP2+ [SP2-]	input	Waveform Vehicle speed about 20km/h		waveform 3
	15 [B3]	NCO+ [NCO-]	input	Waveform	When the engine is idling	waveform 4
	19	OIL [E1]	input	Voltage A/T oil temperature 110℃ (at time)		1 V or less
	21	THW [E1]	input	Voltage Engine cooling water temperature 60~120℃ (at time)		0.2 ~ 1.0V
	23	E2 [Body Earth]	—	導road always		with guidance
C.	2	M-REL [E1]	output	voltage engine off, ignition switch on		9 ~ 14V
	12	SNW0 [E1]	output	electricity	Pattern select switch SNOW" ON	0~3V
					Ignition switch OFF ON (Snow OFF)	9 ~ 14V
	16	SNW1 [E1]	input	electric voltage	Pattern select switch "SNOW" ON (press and hold the switch)	0~3V
					Pattern select switch "SNOW" OFF (switch released)	9 ~ 14V
D.	1	TT[E1]	output	電圧	Stop the engine, turn the ignition switch on, and gradually depress the accelerator pedal from the fully closed position.	0.5V or less 7.6~ Gradual change to 8.7V
	2	L[E1]	input	pressure	Shift lever L range	7.5 ~ 14V
					Other than shift lever L range	0 ~ 1.5V

[ ] indicates the side of the tester bar

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コネクター	wax number	Terminal number	input/output	item	Fixed 条 case	Standard value
D.	3	PWR [E1]	input	Voltage	パターンセ External “POWER” ON	7.5 ～ 14V
					パタ Ichikui POWER" OFF	0 ～ 1.5V
	6	OD2 [E1]	入力	Voltage	Down乂乀`ㄐ一ヌㄔ ON (O/D enabled)	9 ～ 14V
					ト ㄎㄨㄚㄚㄐ一乂乀F OFF (O/D prohibited)	0~3V
	7	OD1[E1]	入力	electricity	ㄎ一乂ㄩㄎㄐ一ㄚㄚ When 504 speed is requested	0~3V
					ㄎㄨㄩㄚ when not operating	9 ～ 14V
	9	IGSW [E1]	入力		Power supply stop, 乂乀ON	9 ～ 14V
	10	2 [E1]	入力	Voltage	Shift lever 2 range	7.5 ～ 14V
					Other than shift lever 2 range	0 ～ 1.5V
	14	BATT [E1]	入力	Voltage	all the time	9 ～ 14V
	22	B[E1]	入力	電圧	エ stop ニッションスイッチ ON	9 ～ 14V
	23	B2 [E1]	入力	Voltage	Engine stop, ignition switch ON	9 ～ 14V
	24	R [E1]	入力	Voltage	Shift lever R range	7.5 ～ 14V
					シフトレバー Other than A	0 ～ 1.5V
	25	STP [E1]	input	電圧	ストッ 75M ON	7.5 ～ 14V
					乂Bottom 2755 OFF (OL one night away)	0 ～ 1.5V

[] Yu ヌ Yuichi's side dimensions

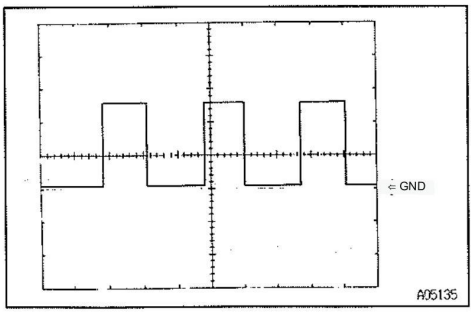
JB3199

shift position	position	Terminal name	
		$1	S2
D レンジ	1 Liao	9 ～ 14V	0.5V or less
	2 years	9 ～ 14V	9 ～ 14V
	3rd gear	0.5V or less	9 ～ 14V
	O/D	0.5V or less	0.5V or less

JB3297

Measurement terminal $1 E1, S2

E1 Voltage changes as shown in the left table according to the gear position.



〈参考〉 oscilloscope waveform

waveform 1

Measurement terminal SPD→E1

instrument set 5 V/DIV, 20ms/DIV

Measurement condition Vehicle speed about 20km/h

note 注意 vehicle speed increases, the waveform cycle becomes shorter.

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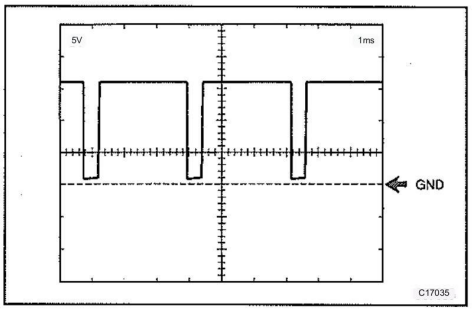


waveform 2

Measurement terminal SLU+ SLU-

Instrument set 5V/

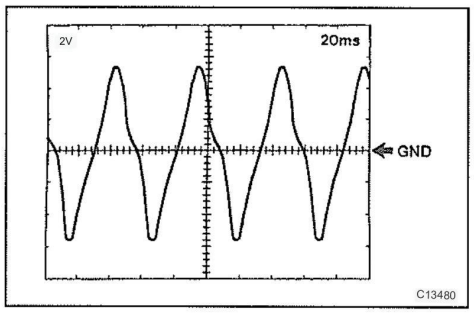
Measurement condition, engine idle speed

注意 DIV, 1 ms/DIV · The duty

· Pulse waveform cycle is about 3.3ms

ratio becomes smaller during lockup

control.



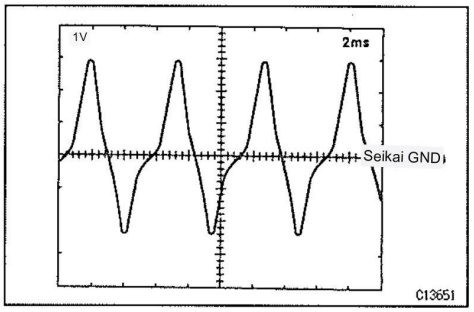
waveform 3

Measurement terminal SP2 + SP2-

Instrument set 2V/DIV, 20ms/DIV

Measurement condition Vehicle speed about 20km/

注意 h The higher the vehicle speed, the shorter the cycle and the higher the voltage.



waveform 4

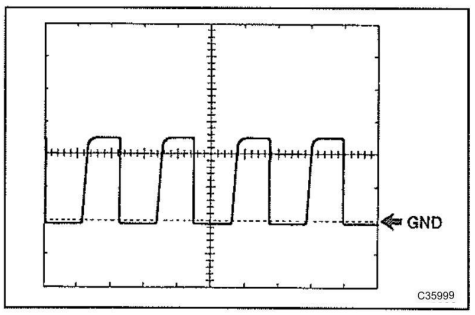
Measurement terminal NCO+NCO-

Instrument set 1V/DIV, 2ms/DIV

Measurement condition, engine idle speed

注意 The faster the input shaft rotation speed, the shorter the period.

pressure increases.



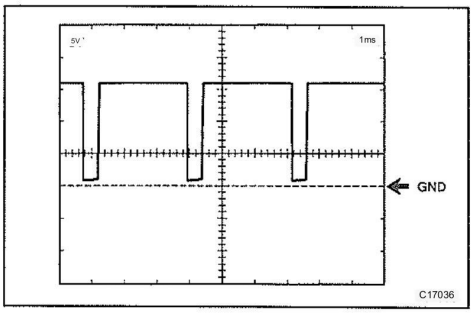
waveform 5

Measurement terminal SP2E1

Instrument set 5V/DIV, 2 ms/DIV

Measurement conditions The higher the

注意 車速 vehicle speed (about 20 km/h) (wheel rotation speed), the shorter the period.



waveform 6

measurement terminal SLT＋↔SLT－

Instrument set 5V/DIV, 1ms/DIV

Measurement condition, Engine idle speed in N range

[Caution] The larger the throttle opening, the smaller the duty ratio of the waveform.

Become

· Synchronization of pulse waveform is about 3.3ms

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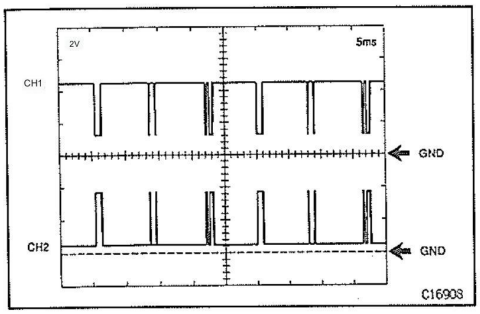
[recollection

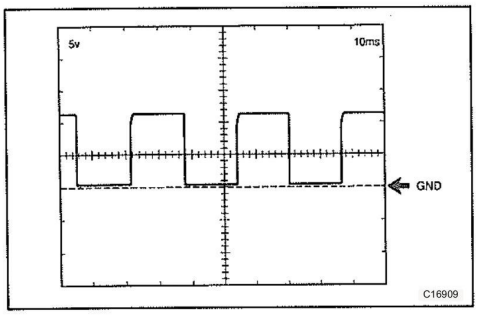


waveform 7

Measurement terminal ECT+ECT-

instrument set 2 V/DIV, 5 ms/DIV

Measurement conditions Engine idle speed

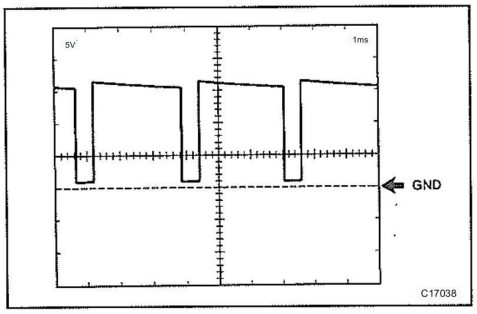


waveform 8

Measurement terminal EFI+EFI-

instrument set 5 V/DIV, 10ms/DIV

Measurement conditions Engine idle speed



waveform 9

measurement terminal SLN+↔SLN−

Instrument set 5V/DIV, 1 ms/DIV

Measurement conditions Engine idle

rotation Note · Duty ratio decreases momentarily when N → D range is operated · Pulse waveform cycle is about 3.3ms

2 Computer data check (vehicles equipped with 1G-FE, 1JZ-GE) · Using the diagnostic tool S2000, check the computer data.

be.

3 Notes on reading computer data

· Computer data values are subject to slight differences in measurement and measurement. Values vary widely due to aging of vehicles, etc. Clear criteria

It is difficult to indicate a value (decision value). Therefore, even if the value is within the reference value, there may be a problem.

· For subtle phenomena such as breathlessness and rough idle, a method of comparing data after collecting data from the same type of car under the same conditions was used.

It is necessary to comprehensively judge from all items of data.

recollection times

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1G-FE

item name	Item name explanation	inspection conditions	Reference	Check items for abnormalities
SPD1	represents vehicle speed	Stopped	0km/h	SPD signal
		When driving at constant speed	no major changes	
THPS	Indicates throttle valve opening Display range: 0~100%	When the throttle valve is fully closed	10 ~ 14%	VC, VTA voltage
		When the throttle valve is fully open	7488%	
		Throttle valve fully closed fully open	change continuously	
IDL	Represents throttle valve fully closed	Throttle valve fully closed → fully open	ON→OFF	Each switch signal
NSW	Represents shift lever position N (P)	Shift lever N→D	ON → OFF	
STP1	Indicates that the brake pedal is being depressed	release the brake pedal	OFF→ON	
ECT	Represents gear position (stage)	Running	Shift to each gear position (stage)	VTA voltage SPD signal
L/U	Indicates that lockup is in progress	Lockup OFF→ON	OFF → ON	
OD2 (3)*	Represents T/M control SW (Represents 3 ranges)*	O/D OFF SW. OFF→ON (shift lever N→3)	OFF→ON	Each switch signal
PWR	Represents pattern select SW.	Pattern select SW. Snow → Power	OFF→ON	
R	represents the R range	Shift lever N→R	OFF→ON	
2	2 represents a range	Shift lever N → 2	OFF → ON	
L	represents the L range	Shift lever N→L	OFF→ON	

*: ( )teeth Gate type shift lever 車

JB3231

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1JZ-GE

item name	Item name explanation	inspection conditions	Reference	Check items for abnormalities
SPD1 SPD2	represents vehicle speed	Stopped	0km/h	SPD voltage
		When driving at constant speed	no major changes	
THPS	Indicates throttle valve opening Display range: 0~100%	When the throttle valve is fully closed	10 14%	VTA voltage
		When the throttle valve is fully open	74 ~ 88%	
		Throttle valve fully closed → fully open	change continuously	
NSW	Represents shift lever position N (P)	Shift lever N→D	ON → OFF	Each switch signal
STP1	Indicates that the brake pedal is being depressed	Release the brake pedal → step on it	OFF → ON	
JUDMore	Indicates the quality of A/T oil	———	OK	A/T oil change
ECT	Represents gear position (stage)	Running	Shift to each gear position (stage)	VTA voltage SPD signal
L/U	Indicates that lockup is in progress	Lockup OFF→ON	OFF→ON	
OD1	Represents cruise control O/D cut signal	O/D cut with cruise control ON	OFF → ON	Each switch signal
OD2 (3)*	Represents T/M control SW. (represents 3 ranges) *	O/D OFF SW. OFF ON (shift lever N3)	OFF → ON	
PWR	Represents pattern select SW.	Pattern Select SW Snow → Power	OFF→ON	
R	represents the R range	Shift lever N→R	OFF→ON	
2	2 represents a range	Shift lever N→2	OFF→ON	
L	represents the L range	Shift lever N→L	OFF→ON	
SLU	Represents the operating state of the lockup control linear solenoid.	Lockup OFF→ON	OFF→ON	VTA voltage SPD signal
NCOs	Represents the CO drum rotation speed	Stopped	0r/min	NCO signal
		40km/h	1450r/min	

*: ( ) is a gate type shift lever vehicle

JB3232

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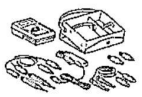
T0049076

Shift lock device with key interlock

supplies

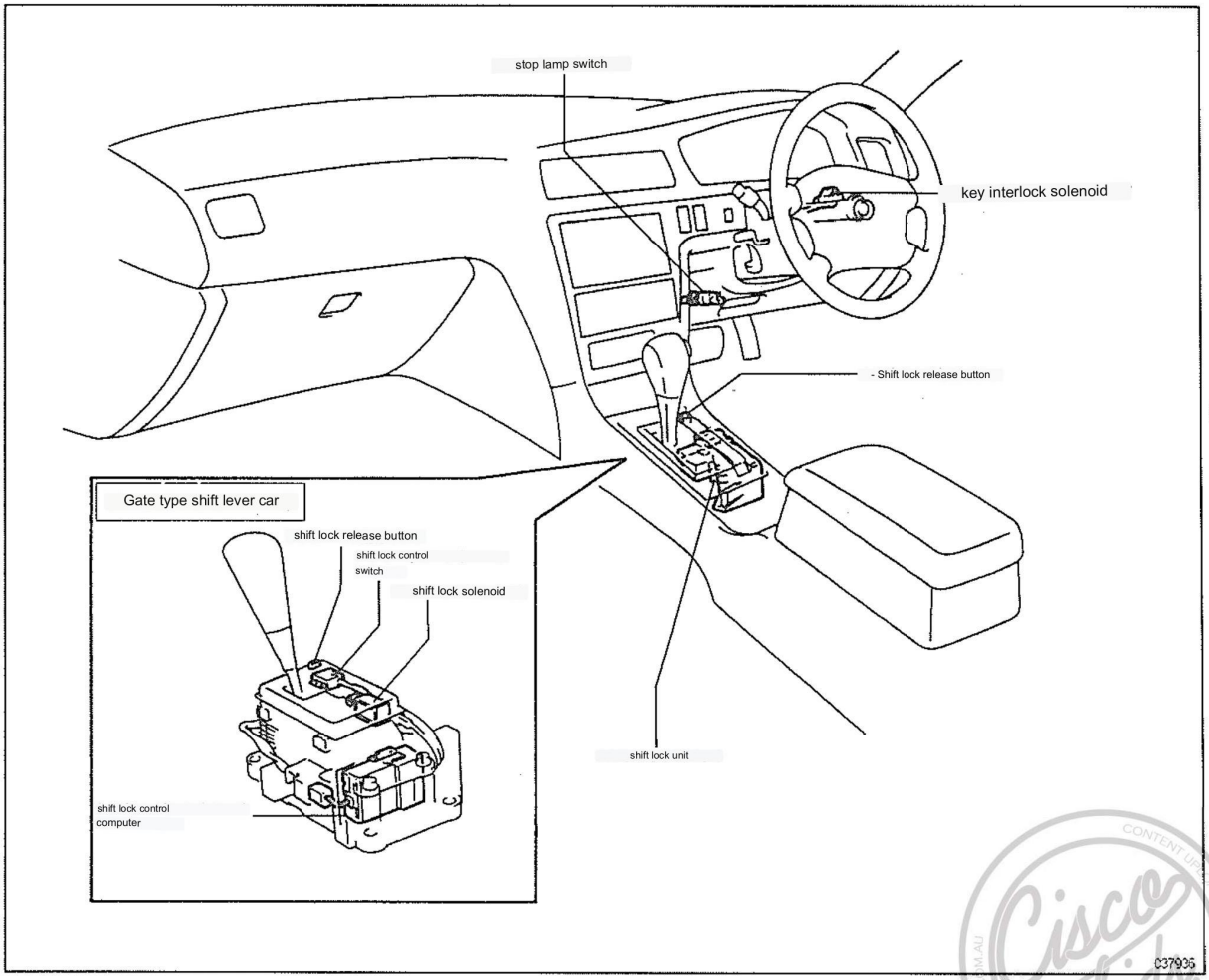
instrument

	09082-00012	Toyota Electrical Tester	For inspection of each part
	(09083-00060)	Mini Test Lead	For inspection of each part

6

T0046077

parts layout



Steamed noodles
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TOC4P078

Functional check

Shift lock device with key interlock

1 Shift lock operation check

(1) Shift to P range with the ignition switch ON.

straight shift lever

(2) Press the shift lever knob button and check that the shift lever cannot be shifted to anything other than the P range.

(3) From the state of (2), depress the brake pedal and shift to other than P range. Check what you can do.

Gate type shift lever

(2) Check that you cannot shift to anything other than the P range.

(3) It is possible to shift to a range other than the P range when the brake pedal is depressed. check that

6

2 Inspection of shift lock release button operation (1) When the shift lock release button is pressed, Check that the shift lock is released. Key

3 interlock operation check

(1) Set the ignition switch to ACC.

(2) Press the shift lock release button and move the shift lever to P range or higher. shift out.

(3) Check that the ignition key cannot be turned to the LOCK position.

straight shift lever

(Four) Shift the shift lever to P range and press the shift lever. state.

CAUTION Release the shift lever knob button once.

(5) Check that the ignition key does not turn to the LOCK position.

(6) When the shift lever knob button is released from the state of (4), check that the control key can be turned to the LOCK position.

Gate type shift lever

(4) Shift the shift lever to P range and check that the ignition key can be turned to the LOCK position.

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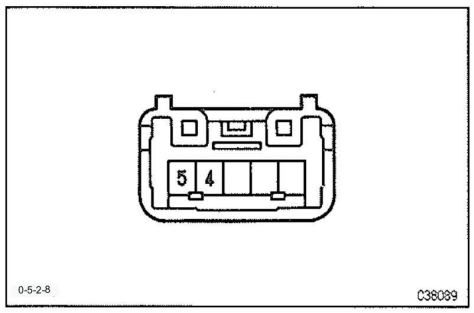
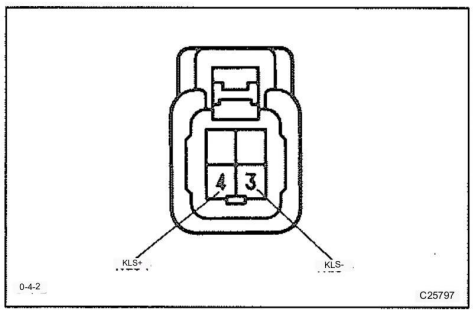
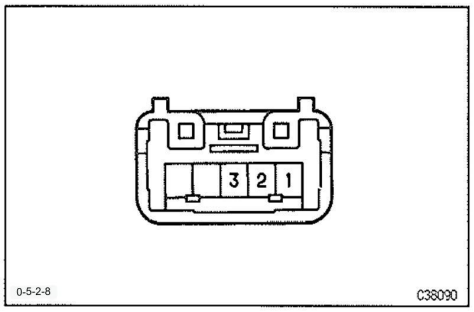
recollection times







T0049079

Unit inspection

Shift lock solenoid (gate type shift lever)

1. Operation check

(1) Disconnect the shift lock solenoid connector.

(2) Battery to solenoid connector 5 (SLS+) terminal, 4

Connect the battery to the (SLS-) terminal and turn on the operating sound of the solenoid.

inspect.

Note: The inspection should be done in a short time.

key interlock solenoid

1 Operation check

(1) Key interlock solenoid (unlock warning

switch) and connect the battery to the 4 (KLS+) terminal.

When a battery is connected to the Lee, 3 (KLS-) terminal,

Check the operating sound of the noid. Inspections

are carried out in a short period of time.

stop lamp switch

(Refer to "Brake" - "Anti-lock brake system" - "Individual inspection")

Shift lock control switch

(gate type shift lever)

1 Continuity check

(1) Disconnect the shift lock control switch connector. (2)

Check continuity between terminals.

standard There is ○○ lead

Terminal number (Terminal symbol) Shift lever position	2 (P)	1 (P2)	3 (P_1)
P range	○		○
Other than P range	○	○	

JB3503

shift lock control computer

1 computer inspection

(1) Check continuity or voltage between terminals.

· Connect the connector to the computer and

Check from the side.·

·Before measurement, check the power supply voltage (10 to 14V when IG is

ON) and ground (after IG is OFF, 5Ω or less between ground terminal

and body).

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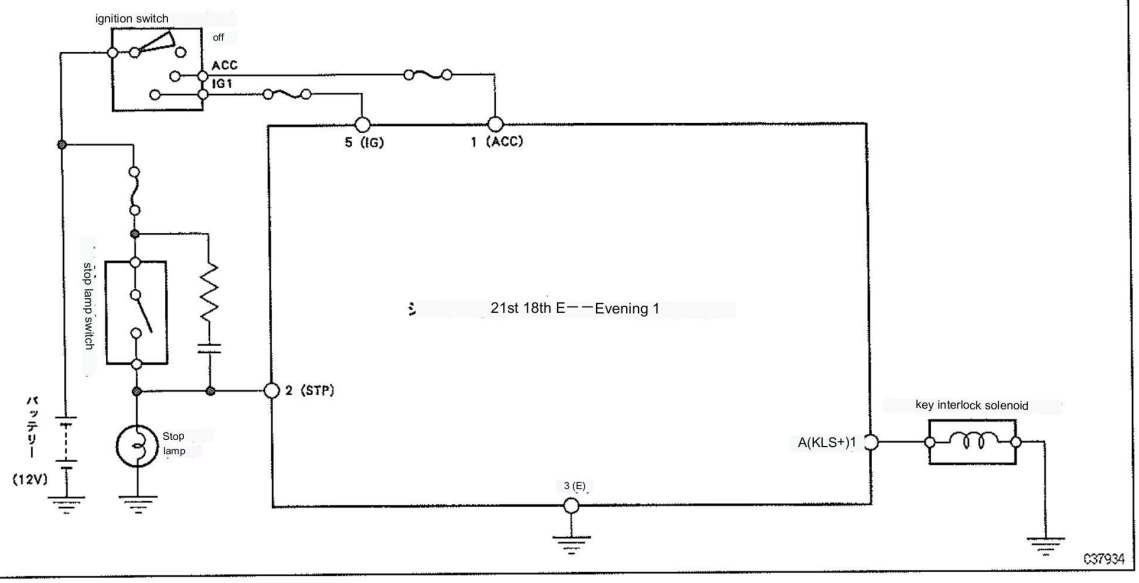
ストレート式シフトレバー

External wiring diagram (outline)



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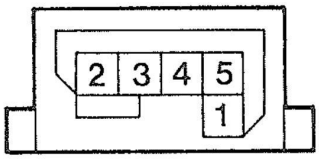

ID	Terminal symbol	input/output	Measurement item	Measurement condition	Reference value
1	ACC (E)	input	Voltage	Ignition switch OFF → ACC	0V → 10 ~ 14V
2	STP(E)	input	yosho	Release the brake pedal → Depress	0V → 10 ~ 14V
3	E	—	lead normal Time		with guidance
4	KLS+(E)	output	electricity	イグニッションスイッチ ACC で P レンジ → P レンジでシフトレバーノ button or shift out of P.range	0V → 7.5 ~ 11.5V
5	IG(E)	input	Voltage	イグニッションスイッチ OFF → ON	OV → 10 ~ 14V

( ) ヌ1 size

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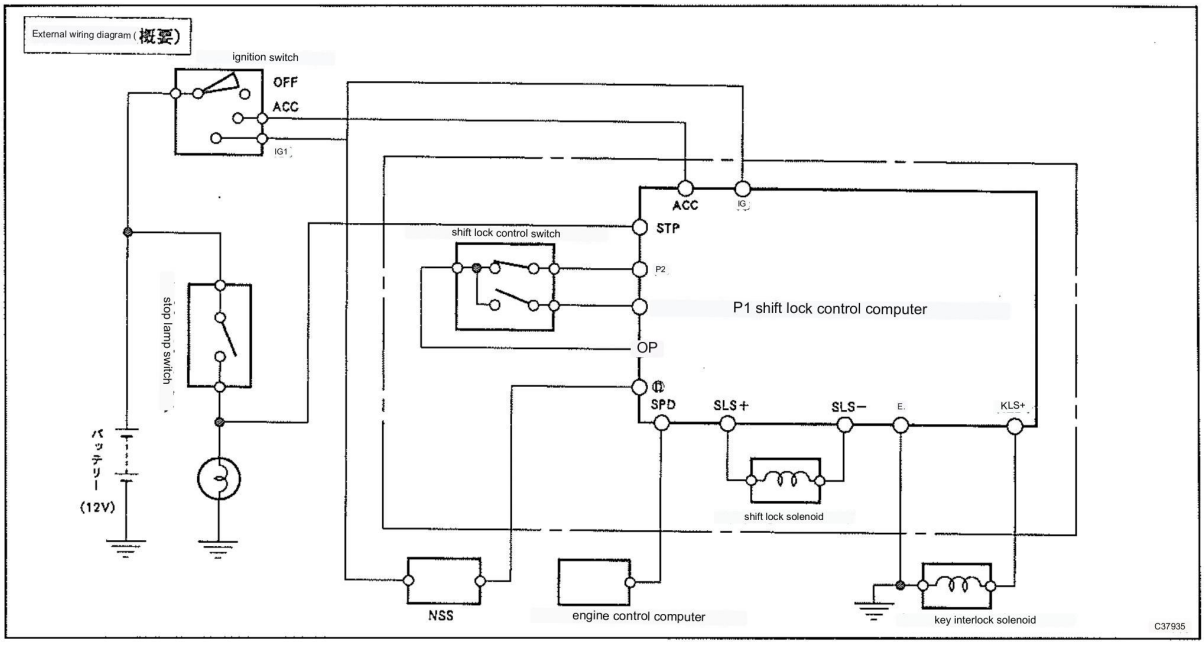
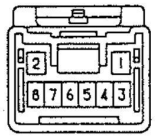
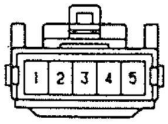
Gate type shift lever





Connector A



Connector B

h-8-2-B ·1

connector	5 Tsuba number	terminal princess	input/output	item	測 Fixed 条 case	Criteria □
A.	1	ACC (E)	input	Voltage ignition switch OFF → ACC		0V → 10 ~ 14V
	2	IG (E)	input	voltage	Ignition switch OFF→ON	0V → 10 ~ 14V
	3	KLS+ (E)	output	crown	Shift from P range to other than P range with ignition switch ACC	OV 7.5~11.5V for about 1 second, then 6~9V
	4	SPD (E)	input	Voltage	Shift to N range when driving at vehicle speed over 11km/h → vehicle speed 11km/h or less	OV 6~8.5V
	5	E (body earth)	—	導通	常 時	lead
	7	⑩ (E)	input	Electric power When the ignition switch is ON, D range → other than D range		10 ~ 14V → 0V
	8	STP (E)	input	Voltage	Release the brake pedal → Depress'	0V → 10 ~ 14V
B.	1	P2 (E)	input	Yosho ignition switch Shift from P range to other than P range with ACC Normal		9 ~ 13.5V → 0V
	2	P (E)	—	導time		with guidance
	3	P_1 (E)	入力	電圧	Shift to P range with shift ON other than Chanyeol range,	0V → 9 ~ 13.5V
	4	SLS− (E)	—	At that time		Continuity ONTE
	5	SLS+ (E)	output	electric voltage	Depress the P range brake pedal with the ignition switch ON → Release the brake pedal or shift to a range other than P range	DV 8.5~13.5V for about 20 seconds, then 6~10V→OV

( ) indicates the side of the tester

JE3XX0

times times

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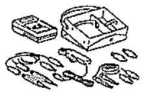
T0049080

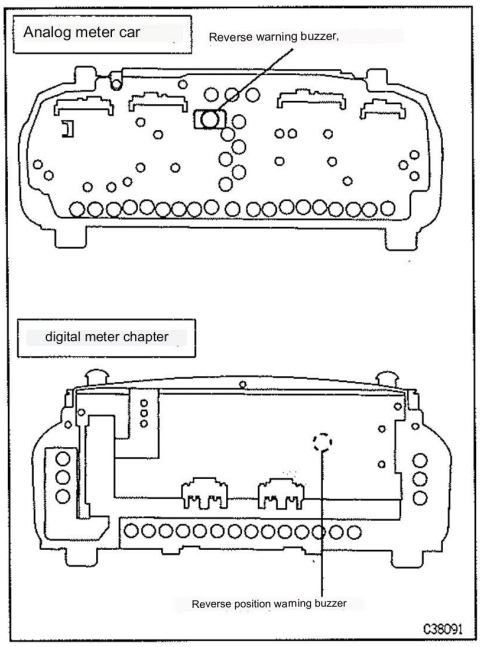
Reverse position alarm device

supplies

knife

	09082-00012	Toyota Electrical Tester	Reverse position warning buzzer for inspection

T0049081



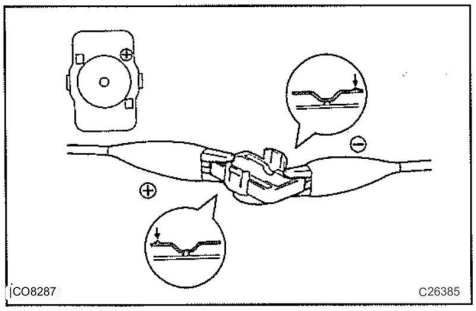
Unit inspection

Reverse position warning buzzer

1 Operation check

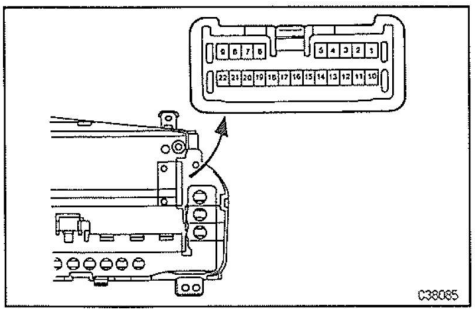
(1) Remove the combination meter and reverse warning buzzer.

position



analog meter car

(2) Check that the buzzer sounds when the battery is connected to the buzzer terminals and the battery is connected to the terminals.



digital meter car

(2) With the battery connected to terminal 22 and the battery to terminal 14 of the combination meter shown in the figure, check that the buzzer sounds when the battery is connected to terminal 7.

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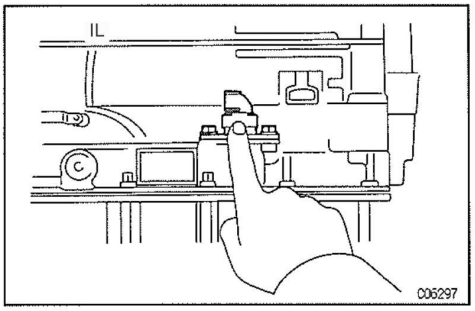
Overdrive (A43D)

supplies

soup bowl

	09082-00012	Toyota Electrical Tester	For each part point
	(09083-00060)	Mini Test Lead	For inspection of each part

6



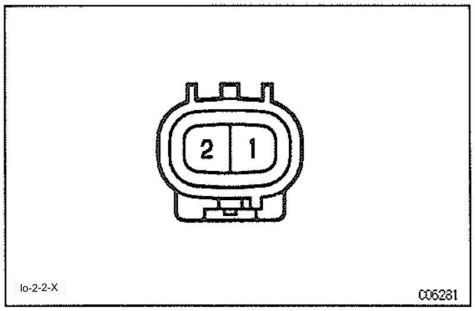
Unit inspection

transmission solenoid

1 Check transmission solenoid

(1) Turn on the ignition switch.

(2) Turn the transmission control switch ON and OFF and check the operating sound of the transmission solenoid.



(3) Disconnect the transmission solenoid connector. (4)

Apply 12V between connector 2 terminal and body ground, and

Check the operating sound of the solenoid.

(5) Measure the resistance between connector 2 terminal and body ground.

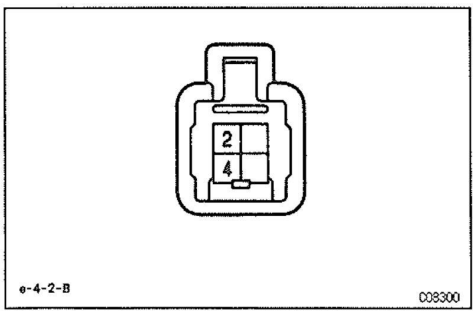
Standard value 11~150

transmission control switch

1 Continuity check

(1) Disconnect the transmission control switch connector and press

Release.



(2) Check continuity between 24 terminals.

Reference Switch ON (O/D enabled) ····· No continuity

Switch OFF (O/D prohibited) · · · Continuity

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T0049086

throttle cable

Preparation product

tool

	09032-00100 oil pan seal cutter	For oil pan removal
plastic hammer	12101	For oil tube installation

soup bowl

Torque wrench [3~23N· m {30~230kgf· cm}] 20117	For tightening each part
Torque wrench [30~190N· m {300~1900kgf· cm)] 20118	For tightening each part

Fats and oils Other

Toyota Genuine Auto Fluid D-II 30308	for automatic transmission injection (A43D, A42DE)
Toyota genuine auto fluid type T-II 30312	for automatic transmission injection (A340E, A340H)
seal packing 1281 50901	For mounting the oil pan (A340E, A340H)

T0049087

throttle cable

•Caution Be sure to check and adjust the throttle cable when attaching or detaching the throttle cable.

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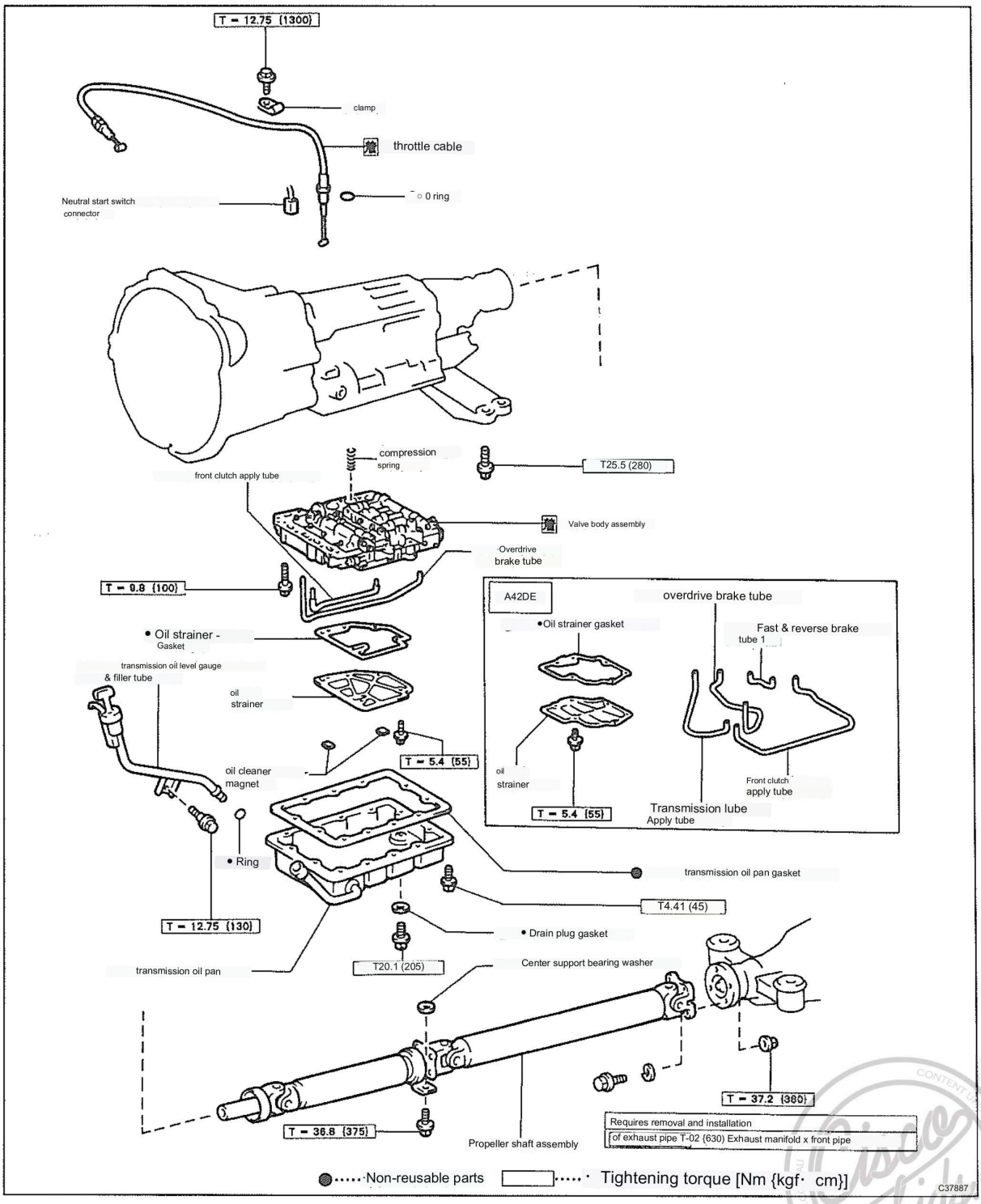
recollection times

A43D, A42DE

Desorption configuration diagram



Steamed noodles
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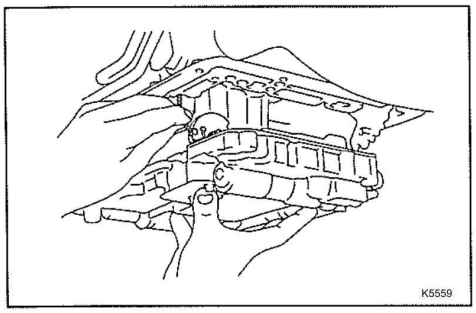
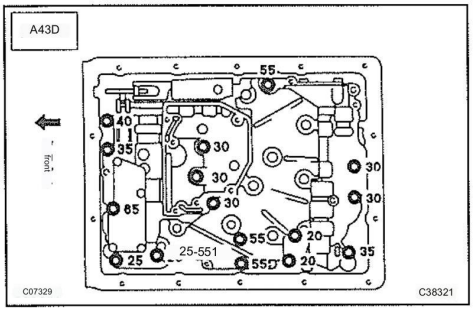


Points to note when installing the throttle cable

1 valve body installation

(1) Connect the throttle cable to the throttle cam on the valve body.

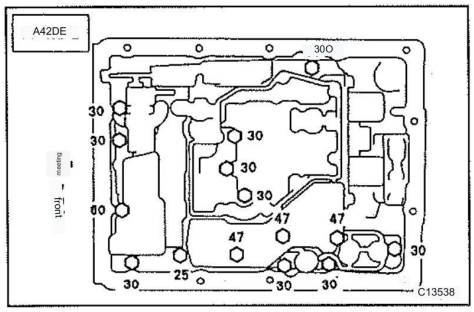
be.

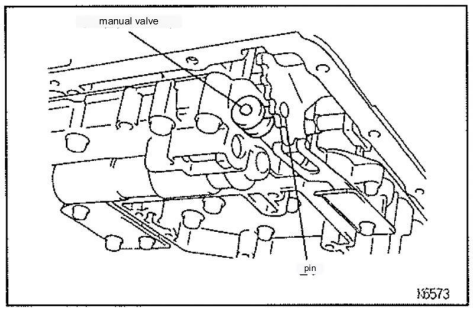


(2) Install the valve body with bolts that are the length under the head shown in the figure.

〈参考〉 number of bolts

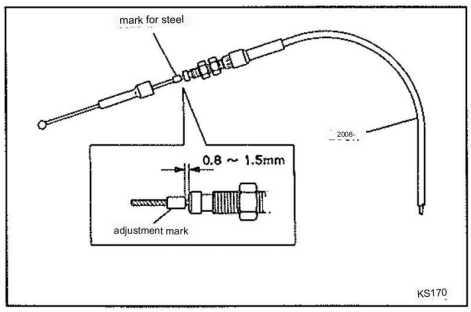
- A43D... ·····17
- A42DE... ····· 15





(3) Align the pin of the manual valve and the lever, and tighten the valve body mounting bolt.

注意 Tighten the bolts evenly in several steps.



2 Crimping mark for throttle cable adjustment

注意
- Do this when installing a new cable.
- Do not pull the cable too much.

Firmly crimp the adjustment mark.

(1) With the throttle cable attached to the valve body, bend the center of the throttle cable to about 200R, and pull the cable until there is no play in the cable (just before the throttle cam moves). Crimp the adjustment mark at the position.

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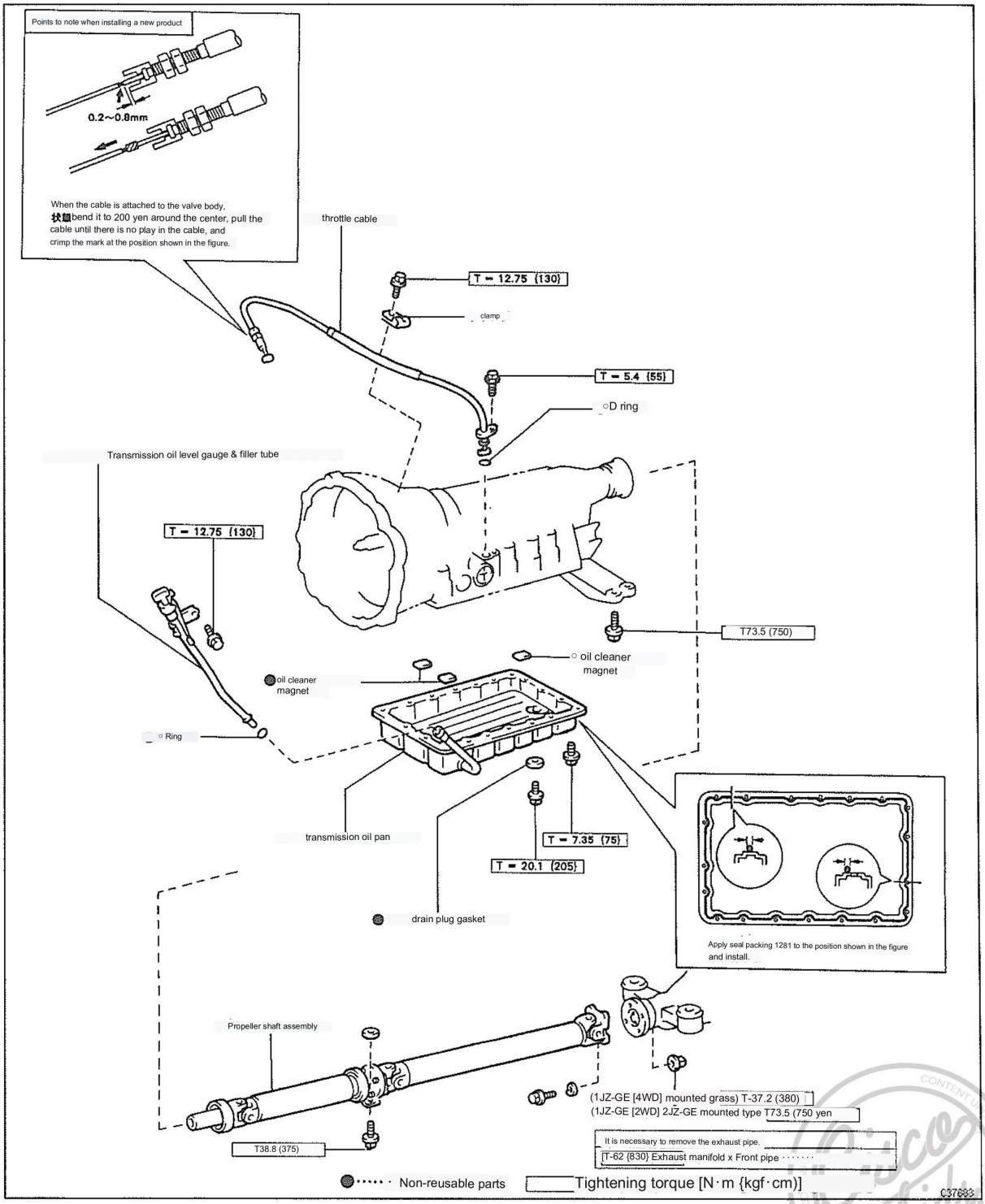
A340E, A340H

Desorption configuration diagram



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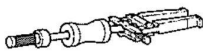
T0048088

Extension housing

Rear oil seal

supplies

S S T

	09308-00010	oil seal puller	For oil seal removal
	09325-20010	transmission oil plug	For oil seal installation (A43D, A42DE)
	09325-40010	transmission oil plug	For oil seal installation (A340E, A341E, A340H)

Fats and oils Other

Toyota Genuine MP Grease No.2	30204	For oil seal lip application
Toyota Genuine Auto Fluid D-I	30308	For automatic transmission injection (A43D, A42DE)
Toyota genuine auto fluid type T-II	30312	For automatic transmission injection (A340E, A341E, A340H)

6

recollection times
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T004SC83

extension housing

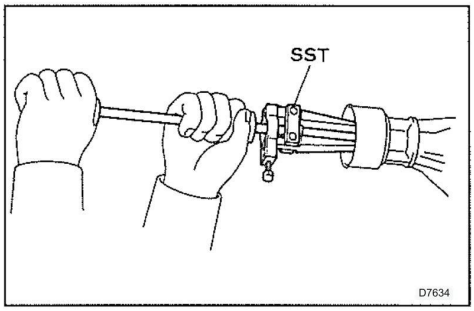
rear oil seal

Extension housing rear oil seal replacement

1 Drain the automatic transmission oil <Reference> Measure the amount of oil that has been drained so that it can be used as a reference when refilling the oil. Become.

2 Remove the propeller shaft

(Refer to "Propeller Shaft" - "Propeller Shaft" - "Removing the Propeller Shaft")

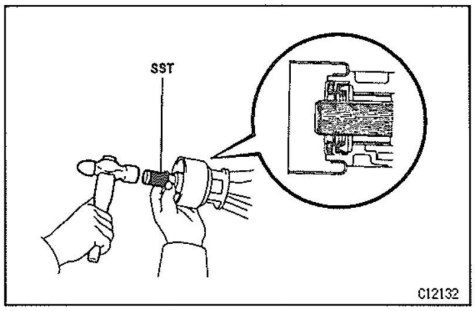


3 Remove the oil seal

(1) Use SST to remove retainers, dust seals and oil seals.

remove the le.

S S T 09308-00010



4 Install the oil seal

(1) Apply a small amount of Castle MP glue to the lip of the new

Apply Wreath No.2.

oil seal (2) Use SST to attach the new oil seal to the extension housing

Hit until it hits the ring.

S S T 09325-20010 (A43D A42DE)

09325-40010 (A340E, A341E, A340H)

note Do not press the oil seal too hard to deform it.

(3) Use SST to ensure that new dust seals and retainers

Hit until it hits Lucille. (A43D, A42DE)

S S T 09325-20010

5 Propeller shaft installation

(Refer to "Propeller shaft" - "Propeller shaft" - "Propeller shaft installation") (

6 Filling automatic transmission oil (Refer to

"Basic inspection and adjustment" - "Transmission oil")

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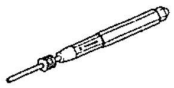
recollection times

T0049090

Floor shift assembly

supplies

tool

	09031-00030	Pin punch (Φ3mm)	For removal of grooved pin (straight shift lever)

instrument:

Torque wrench [3~23N· m {30~230kgf· cm}] 20117	For tightening each part

Oil and other

Toyota genuine body grease 31003	For coating each part
Wire (2mm inside) 52003	For removing the shift lock solenoid link (gate type shift lever)
Nut (10mm) 54618	shift lever - for nut mounting (gate type shift lever)

T0049091

6

Floor shift assembly

•Caution: After removing and installing the floor shift, be sure to check and adjust the position of the shift lever and check the function of the shift lock device.

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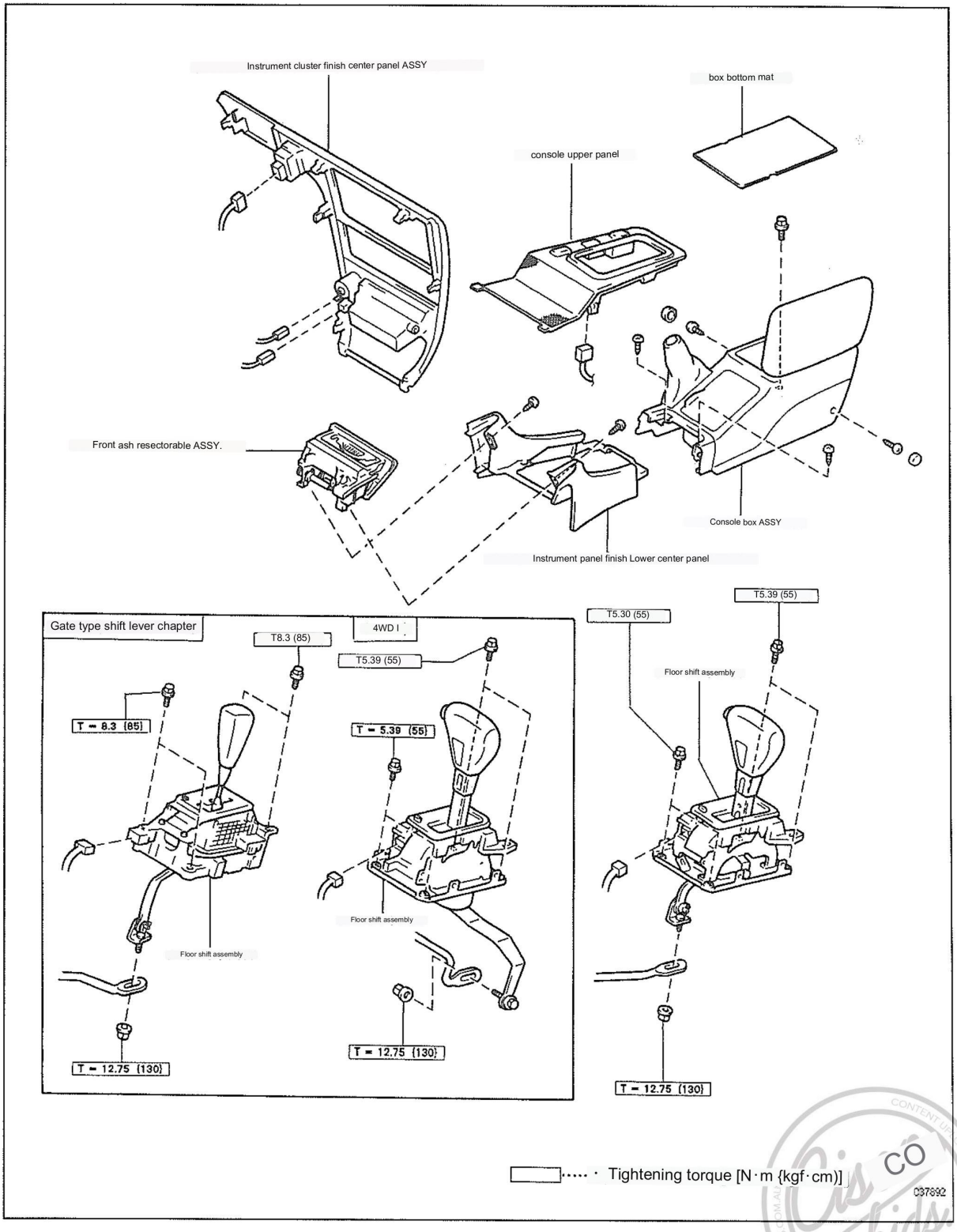
Desorption configuration diagram



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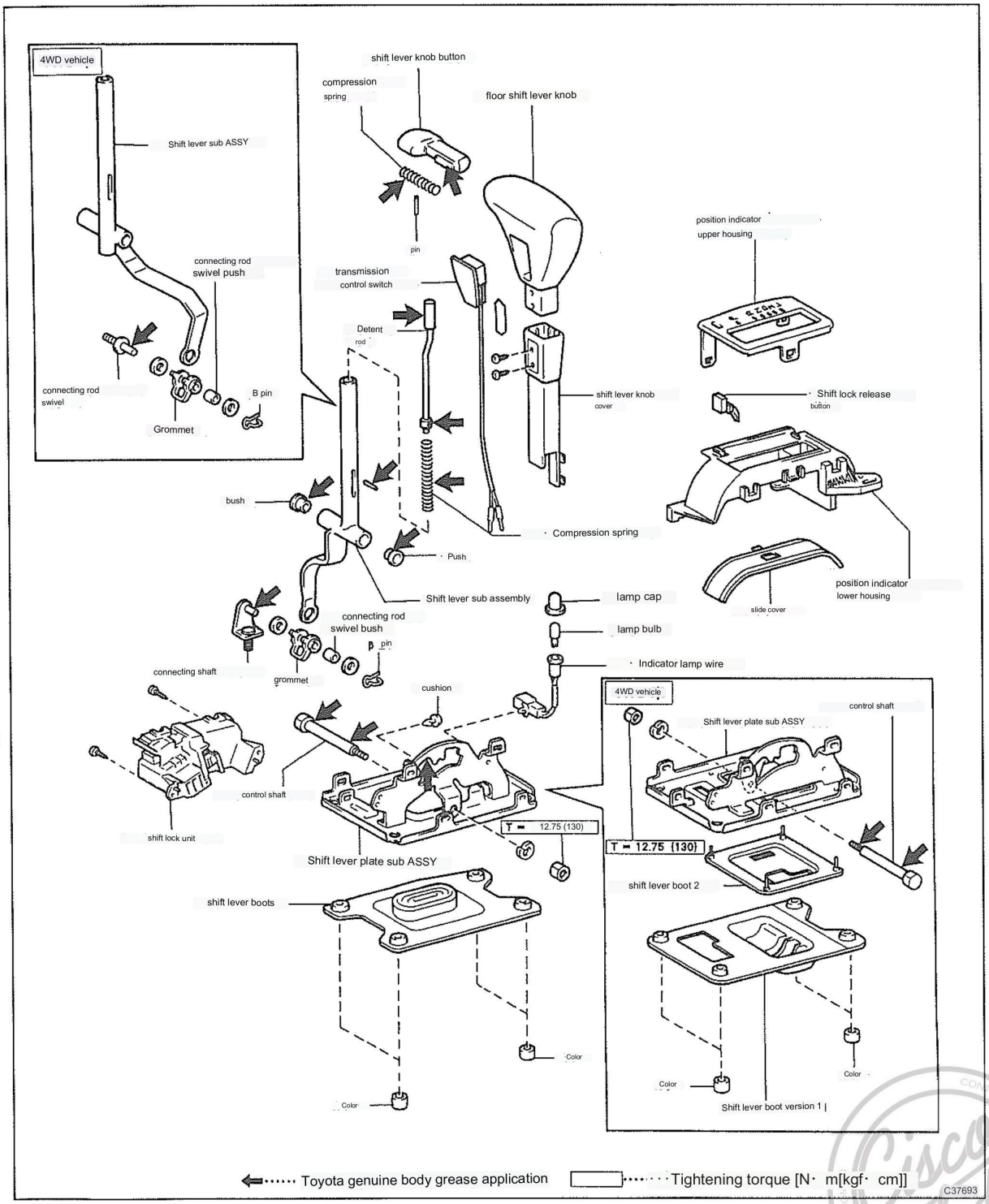
Exploded view

straight shift lever



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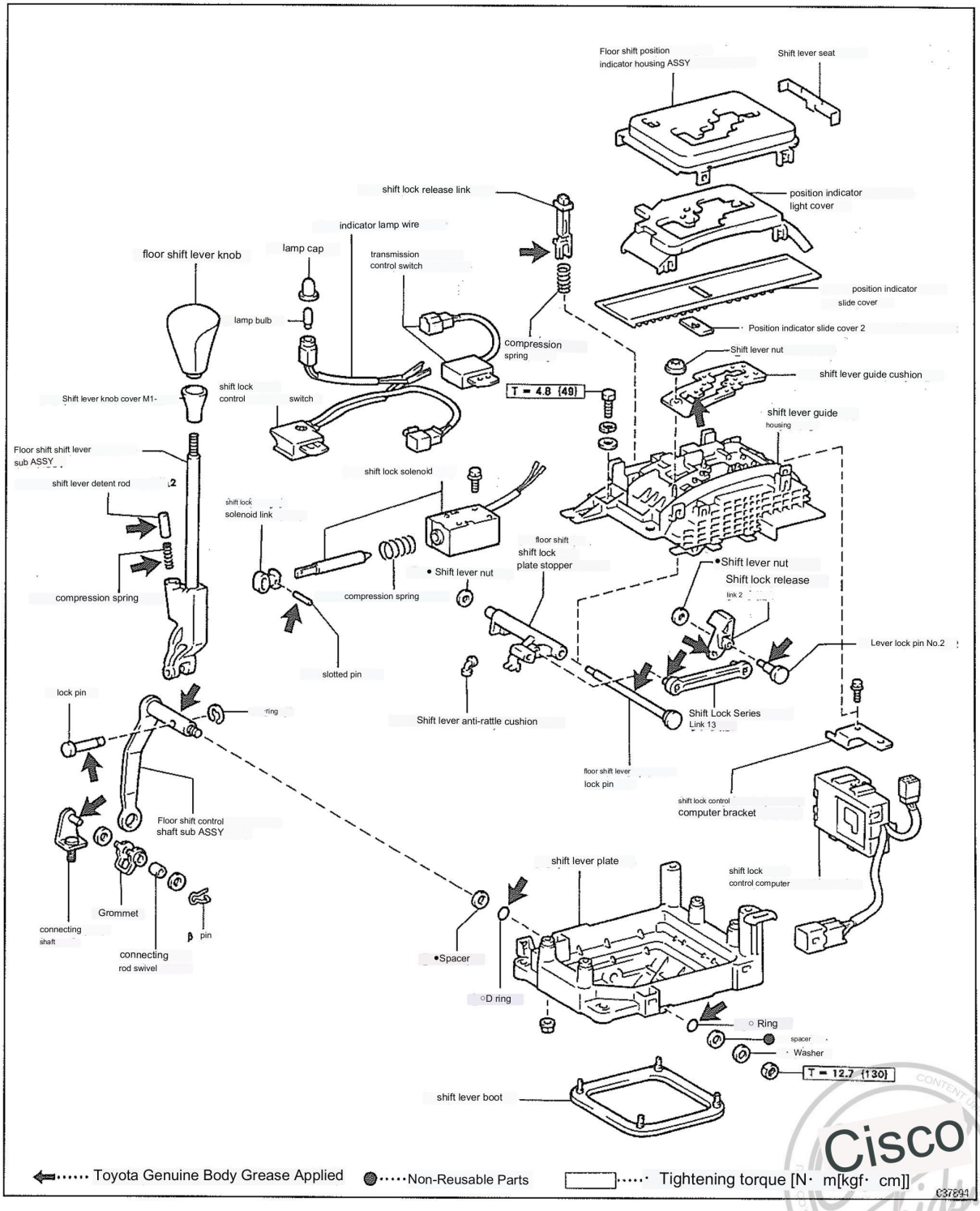
Automatic transmission floor shift assembly

Gate type shift lever



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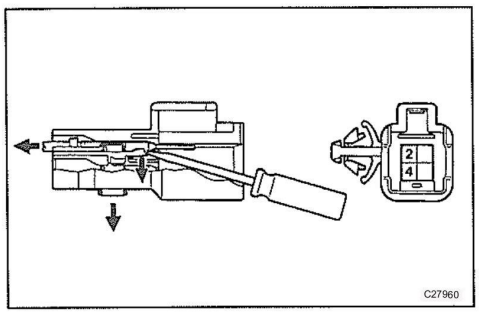


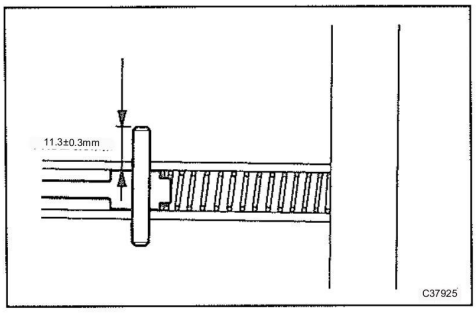
Points to note when disassembling the floor shifter

straight shift lever

1 Remove the transmission control switch terminal

(1) Using a thin blade screwdriver, the terminal of the switch to the connector of the indicator lamp wire.

Remove from terminals 2 and 4.



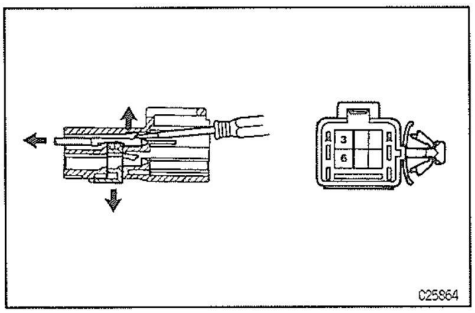
2 Detent rod assembly

(1) Shift compression spring and detent rod

Insert into lever.

(2) Drive the grooved pin to the reference value using a pin punch. Standard value 11.3±0.3mm (dimension from detent rod)

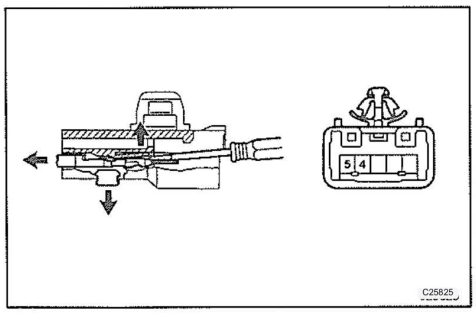
6



Gate type shift lever

1 Removing the indicator lamp wire terminal

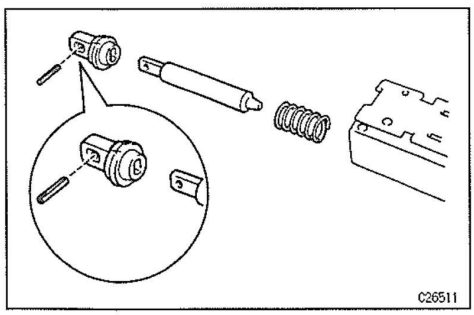
(1) Using a thin blade screwdriver, remove the indicator lamp wire terminal from the transmission control switch connector terminals 3 and 6.



2 Remove the shift lock solenoid terminal (1)

Using a thin-bladed screwdriver, remove the terminal of the shift lock solenoid.

左 Shift lock control switch connector 4, 5 terminals remove it from the



3 Disassemble shift lock solenoid

(1) Remove the solenoid link with plunger No.1 and spring from the solenoid.

(2) Use a 2mm wire to remove the slotted pin and remove the solenoid link from plunger No.1.

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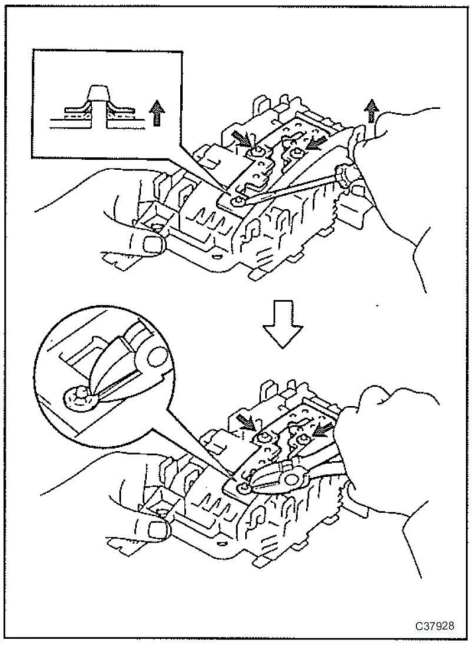


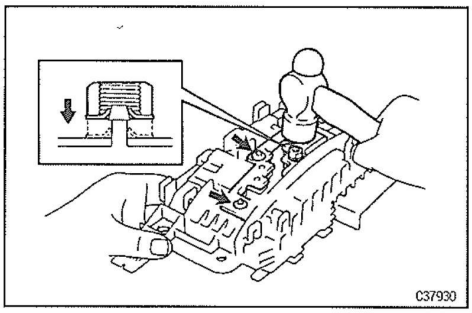
4 Removing and installing the shift lever guide cushion

〈参考〉 Follow the same procedure for removing and installing the shift lock plate stopper and the shift lever nut of the shift lock release link No.2.

do in

(1) Pry up the 3 shift lever nuts using a thin blade screwdriver.

(2) Using nippers, cut off 3 shift lever nuts and remove the shift lever guide cushion.



(3) Attach the shift lever guide cushion to the shift lever guide housing.

Assemble to

(4) Assemble 3 new shift lever nuts to the shift lever guide housing through a 10mm washer nut and lightly tap it with a hammer.

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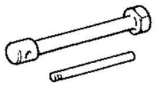
T0048092

Transmission ASSY

supplies

SST

	09350-20015	TOYOTA AUTOMATIC TRANSMISSION TOOL SET	
	(09397-22020)	1-way clutch test tool set	For inspection of torque converter 1-way clutch (A43D)
	09350-30020	TOYOTA AUTOMATIC TRANSMISSION TOOL SET	
	(09351-32010)	1 way clutch test tool	For inspection of torque converter 1-way clutch (other than A43D)
	(09351-32020)	Stator Stopper	For inspection of torque converter 1-way clutch (other than A43D)

soup bowl

Dial gauge	21201	For drive plate run-out inspection
Torque wrench [3~23N· m {30~230kgf· cm}]	20117	For tightening each part
Torque wrench [30~190N· m (300~1900kgf· cm)]	20118	For tightening each part
straightedge	22101	For confirming torque converter mounting dimensions

Fats and oils Other

Toyota Genuine Auto Fluid D-II	30308	For automatic transmission injection (A43D, A42DE)
Toyota genuine auto fluid type T-II |	30312	For automatic transmission injection (A340E, A341E, A340H)

T0040003

Transmission ASSY

- When removing or installing the transmission, the engine and dash panel Put a waste cloth between them to prevent damage to each part.· For torque converters with a phase mark, put an identification mark on the set bolt closest to the mark. (Some bolts have different colors from the beginning)

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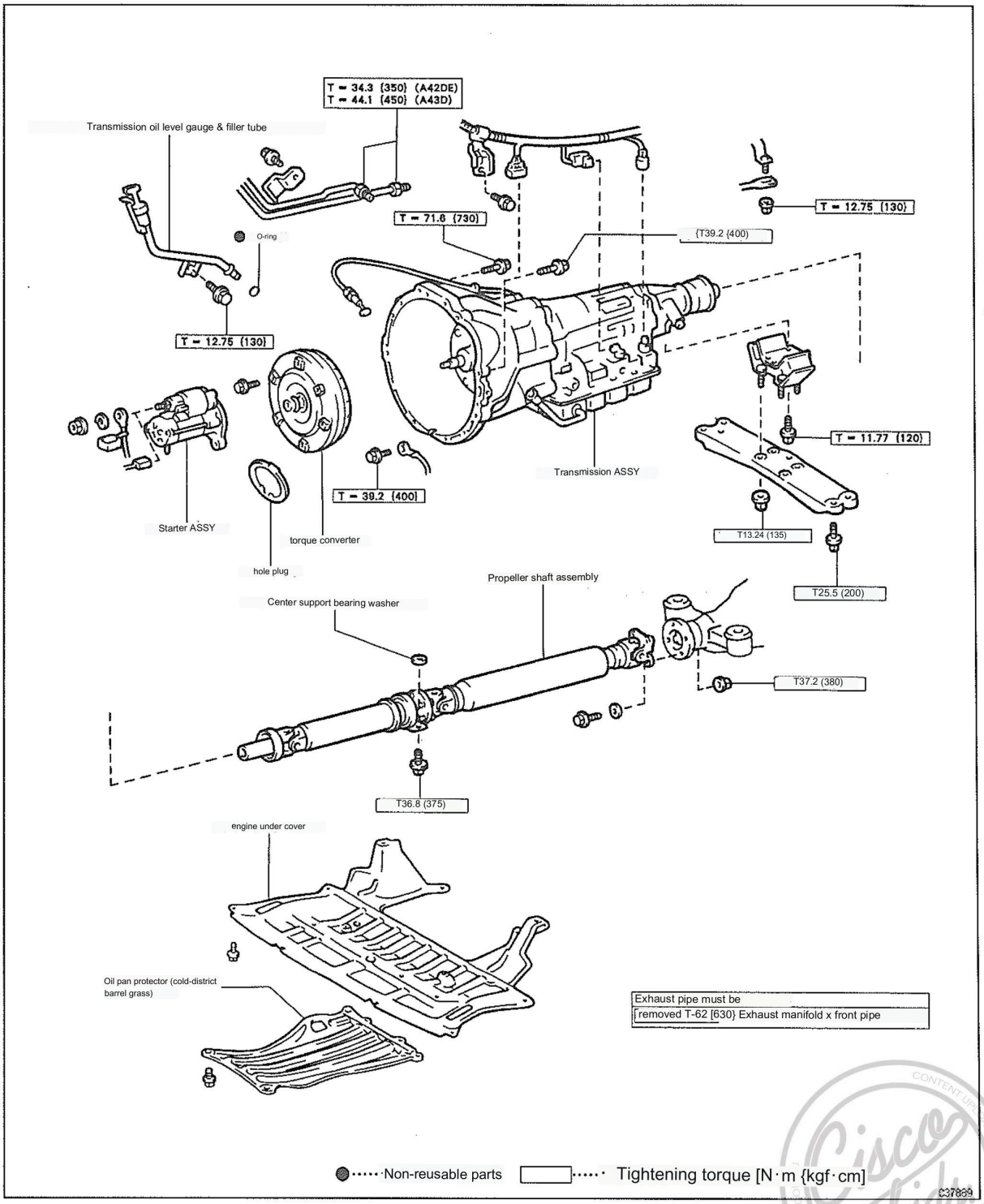
recollection times

Desorption configuration diagram

A43D, A42DE



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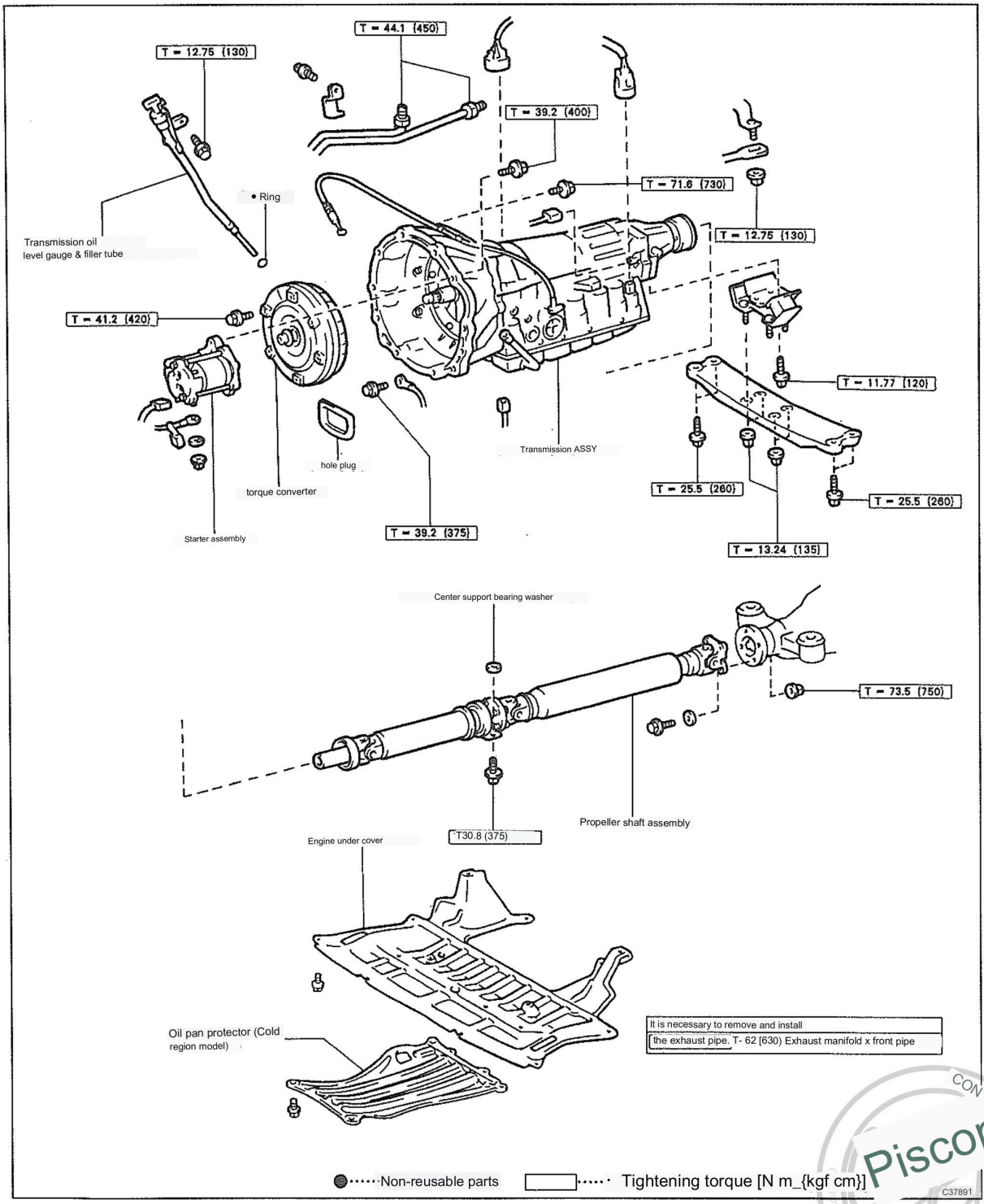
A340E, A341E



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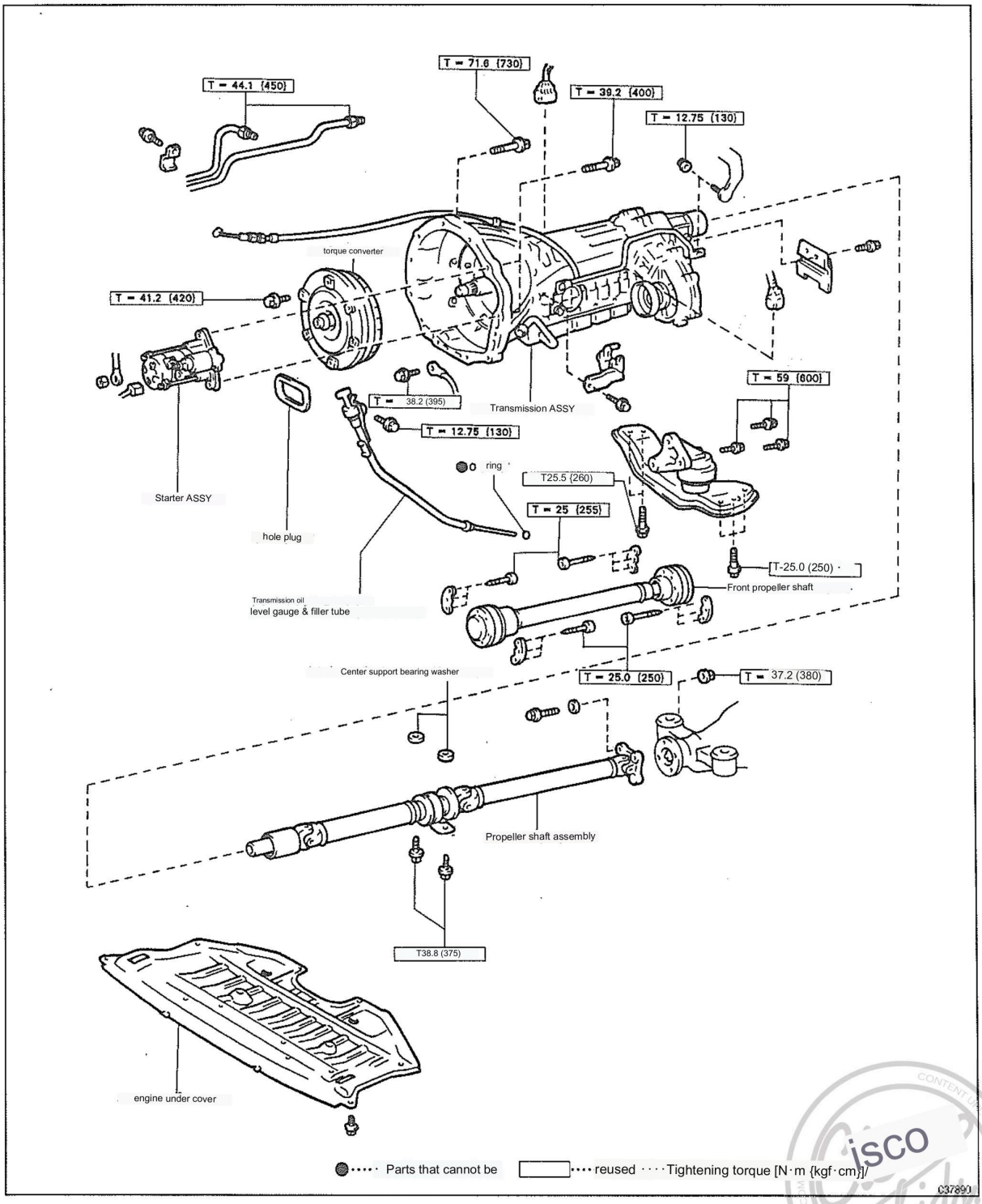
A340H



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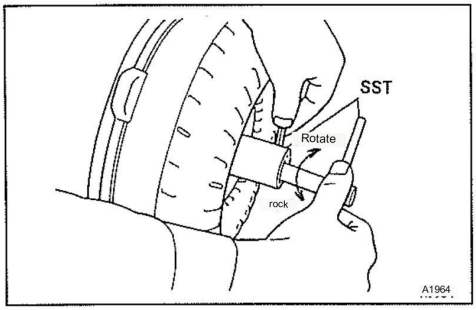

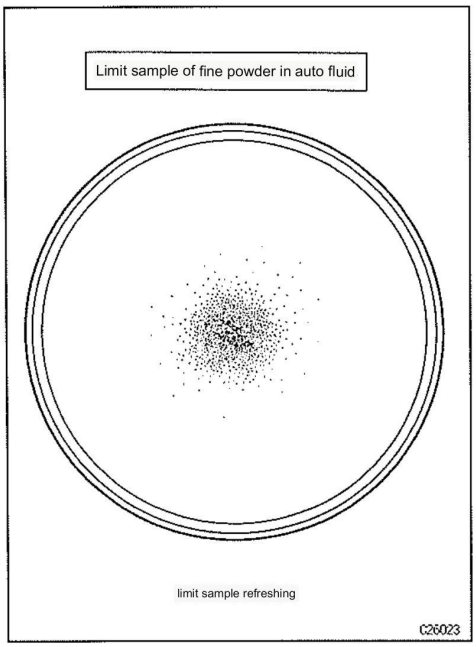

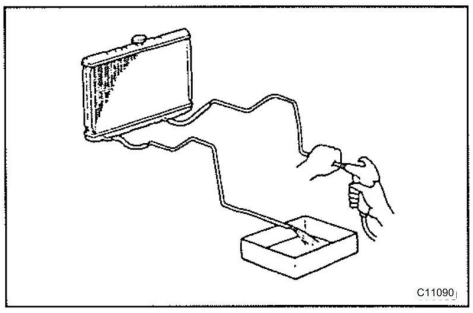

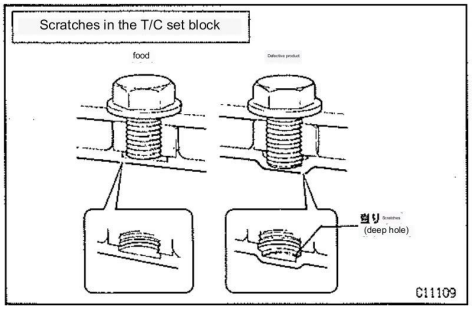

YD049094

unit inspection

torque converter

1 Torque converter 1-way clutch operation

check (1) Set SST to the torque converter.

S S T 09351-32010 09351-32020 (other than A43D)
09397-22020 (A43D)

(2) Stand the converter upright and rotate the SST.

Criteria Rotates lightly when turned to the right, and locks when turned to the left

2 Judgment and maintenance of torque converter and auto fluid

(1) Determination of torque converter replacement

If the inspection results are as follows, replace the torque converter. ① Stall test or neutral torque converter section

I hear a metallic sound.

(2) The 1-way clutch is free or locked in both directions. ③ Fine powder is mixed in the auto fluid more than the limit sample. (limit (see sample)

④ The torque converter is damaged by the mounting bolts.

<Reference> Limit sample of fine powder in autofluid The sample is about 25mL (one 35mm film case) of autofluid from the removed torque converter and extracted into a Petri dish.

*Refer to the following materials for limit samples of fine powder in auto fluid.

- Instructions included with link and rebuilt A/T
- Service technical information issued on March 11, 1962 (maintenance edition summary 7002)

(2) Replacing the Auto Fluid in the Torque Converter ① If the auto fluid has a foul odor or discoloration, stir the auto fluid in the torque converter well, turn the mounting surface up, and drain the auto fluid.

(3) Cleaning and inspection of oil cooler and oil pipeline

① When torque converter inspection and auto fluid replacement are performed Clean the oil cooler and pipeline.

· Blow compressed air of 196kPa {2kgf/cm^} from the inlet hose. and clean it.

· If there is a large amount of fine powder mixed in the auto fluid, pour in new auto fluid using a bucket pump, etc., and clean it again. clean up.

② If the auto fluid is cloudy, check the oil cooler (radiator).

3 Prevention of torque converter deformation and oil pump gear damage

Existence check

① If there is an interference mark between the tip of the torque converter mounting bolt and the bottom of the torque converter mounting the bolt and torque converter.

(2) All mounting bolt lengths must be the same (within 0.5mm) (no missing spring washers)

6
hole, replace
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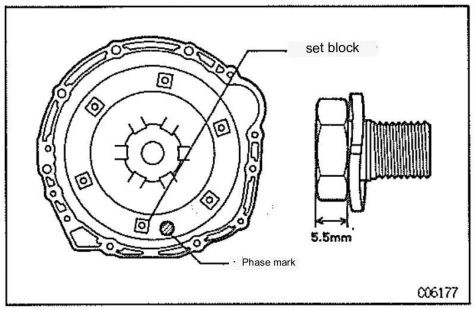
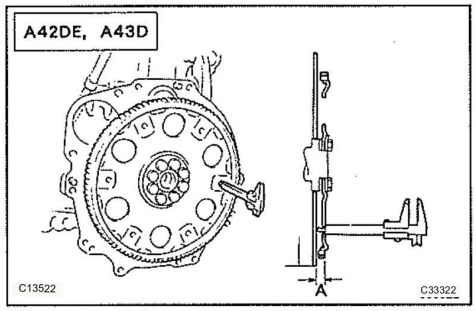
times recollection



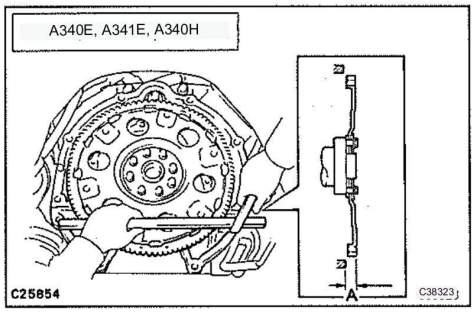
(2) Confirmation of centering bolt installation position For torque converters with a phase mark, install a bolt with an identification mark on the set block closest to the mark.

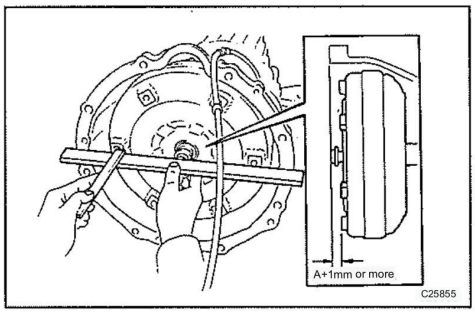


4 Confirmation of torque converter mounting dimensions

(1) Transmission mounting surface and drive plate converter

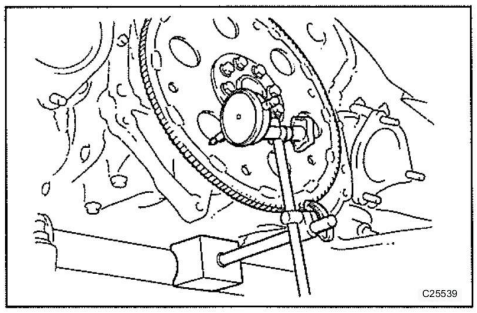
Measure the dimension A from the motor mounting surface.





(2) After installing the converter, measure the dimension from the end face of the housing to the converter set block and confirm that it is larger than the A value measured in (1).

Standard value A+1mm or more



drive plate

1 Checking drive plate

run-out (1) Use a dial gauge to check drive plate run-out.

be.

Limit 0.2mm

注意 The value near the bolt hole is the runout of the drive plate.

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7 Transfer

Functional check ..... 7 – 2
Preparations ..... 7 – 2
Functional check ..... 7 – 3
hydraulic test ..... 7 – 3
electrical control ..... 7 – 4
Preparations ..... 7 – 4
Parts layout diagram ..... 7 – 5
Functional check ..... 7 – 6
Test mode inspection ..... 7 – 6
troubleshooting ..... 7 – 7
Diagnosis check... ..... 7 – 7
Individual inspection... ..... 7 – 10
transmission solenoid ..... 7 – 10
Steering sensor ..... 7 – 10
Indicator lamp... ..... 7 – 11
speed sensor ..... 7 – 11
Stop lamp switch... ..... 7 – 11
ABS & 4WD Computer... ..... 7 – 11
extension housing
Rear oil seal...7-11
Preparations ..... 7 – 11
Extension housing rear oil seal ..... 7 – 12
Detachment configuration diagram ..... 7 – 12
Extension housing rear oil seal replacement ... 7-12
front oil seal ..... 7 – 13
Preparations ..... 7 – 13
front oil seal ..... 7 – 14
Detachment configuration diagram ..... 7 – 14
Points to note when installing and removing the front oil seal 7-14

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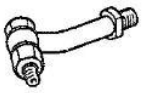
TOC48170

Functional check

Preparations

instrument

	OPG-210 ATG-100	Automatic transmission oil pressure gauge set Available from Banzai Co., Ltd. Available from Iyasaka Co., Ltd.	For oil pressure measurement
	(OPG-142) (ATG-OP10)	Adapter C Treated as Banzai Co., Ltd. Treated as Iyasaka Co., Ltd.	For oil pressure measurement

Oils and fats/others

Toyota genuine auto fluid type T-III	30312	For automatic transmission injection

7

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T004B180

Functional check

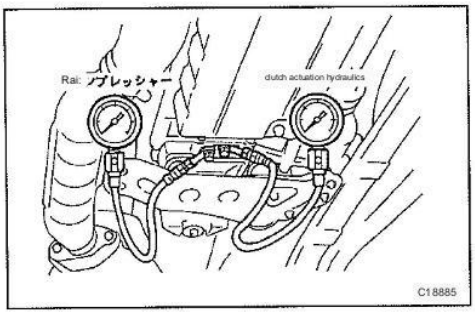
hydraulic test

注意 Perform this after confirming that the AT line pressure is normal.

Hydraulic inspection items	Explanation	Estimated defect location when inspection fails
Line pressure check	A/T line pressure transfer inlet inspect the parts (transfer operating pace hydraulic)	• A/T oil pump · A/T primary regulating valve · Hydraulic system line
center differential Clutch hydraulic pressure check	Check the clutch hydraulic pressure regulated by the linear solenoid (SLC)	· Solenoid modulator valve · Linear solenoid (SLC) · Control valve Hydraulic system path

JB1931

7



1 Preparation before inspection

(1) Remove the test plug and attach the pressure gauge.

(2) Apply the parking brake and chock the wheels.

(3) Start the engine and move the steering wheel to the straight-ahead position.

(4) Measure the oil pressure under each condition while strongly pressing the brake pedal.

(5) Check that the clutch oil pressure decreases when the steering wheel is rotated more than 140 degrees to the left or right during a stall.

Reference value

line pressure

Transmission model (engine model)	shift position	Line pressure [MPa (kgf/cm²)] At idle	Line pressure [MPa (kgf/cm²)] At stall
A340H (1JZ-GE)	D range	0.393 ~ 0.451 {4.0 ~ 4.6}	1.050 ~ 1.147 {10.3 ~ 11.7}
	R range	0.579 ~ 0.657 {5.9 ~ 6.7}	1.304 ~ 1.637 {13.3 ~ 16.7}

Center differential hydraulic pressure

steering wheel position	engine rotation	Clutch oil pressure [MPa {kgf/cm²}]
Steering wheel straight ahead position	Idle	0.01~0.147 0.1~1.5}
	Stall	0.628~0.833 (6.4~8.5}

JB1930

注意 Do not continue to stall for more than 5 seconds.

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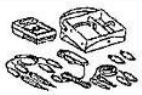
T0048181

electrical control

Preparations

instrument

	09082-00012	Toyota Electrical Tester	For inspection of each part
	(09083-00060)	Mini test lead	For connector inspection
	09843-18020	Diagnosis check wire	Diagnosis connector terminal for short circuit
oscilloscope	20501		For waveform inspection

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Oils and fats/others

Valve (12V-8W)	54303	For linear solenoid inspection

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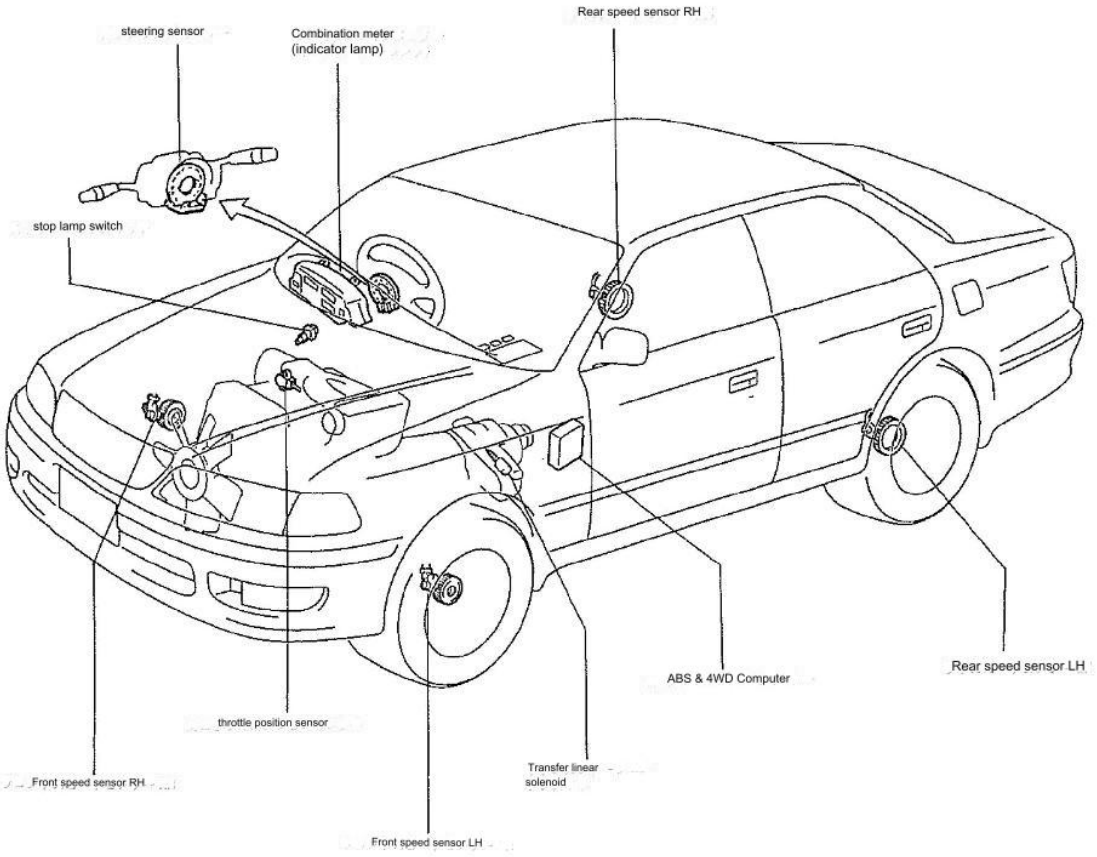
T0048182

Parts layout diagram



Cisco Chios
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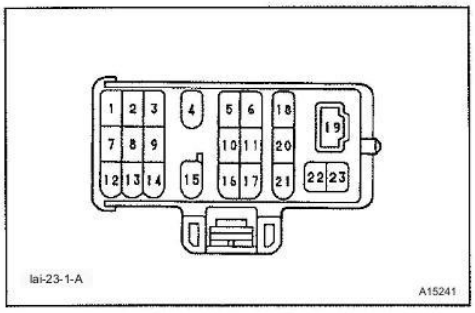


Functional check

Test mode inspection

<Reference> - When changing from normal mode to test mode, each computer first memorizes the test mode codes for all inspection items of each suspension control system.

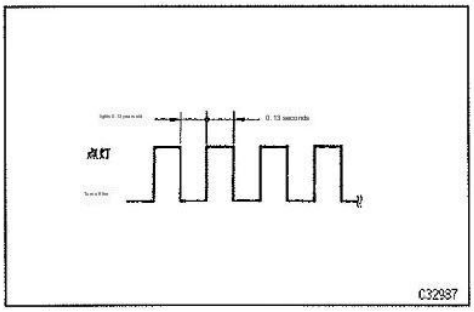
- Perform operations for each inspection item, and if the computer determines that it is normal, erase the test mode code.
- When inspecting only one system, the test mode codes of other suspension control systems may not be cleared. (However, regarding the speed sensor system noise check, the code is not memorized at the start of the test mode, but is memorized only when an abnormality is detected.)

1 Battery voltage check

Standard value 10~14V (when engine is stopped)

2 Test mode inspection

7



project	work
test mode set	Remove the short pin and short-circuit between terminals 16 (Ts)↔3 (E_1)
engine start	Check that the 4WD warning lamp is in test mode (blinks every 0.13 seconds)
driving test	Speed sensor function check

Inspection items	Sensor output voltage check	Sensor output voltage fluctuation check	Sensor output (high speed) Voltage fluctuation check
Vehicle speed [km/h]	0 ~ 10	45 ~ 80	80 ~
Warning lamp status	*Blinking	Flashing (abnormal) Off (normal)	Flashing (abnormal) Blinks for 1 second → Off (normal)

Steering sensor function check

"Warning Olympus	"Flashing"	lit	blinking
Steering wheel position Straight ahead	Turn left and right by more than 90 degrees and return to straight forward state		Go straight

Test mode code display	11 (Tc) 3 (E_1) Short between terminals (16 (Ts) 3 (E_1) end Do not open the short circuit between the children) Note: Display the normal diagnosis code as well.
Cancel test mode	Open between terminals 11 (Tc)3(E_1) and 16 (Ts) 3 (E_1)

*Since it is not possible to determine whether the warning lamp is normal or abnormal, please perform a driving test.

After finishing, be sure to check the code on the test mode code display.

JB3032

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3 Test mode code list

code number	Diagnosis details (Terminal symbol)	Test mode code judgment conditions (96 is an abnormality detection condition)	Inspection items
96	Large fluctuation in output voltage of either front right, front left, rear right, or rear left speed sensor [FR+, FR-, FL+, FL-, RR+, RR-, RL+, RL-]②	Abnormality detection conditions ①After erasing other test mode codes, execute at a vehicle speed of 25km/h or less. Go straight ahead. ③⑤ Do not press the brake pedal. - (Once the vehicle has stopped, it will not enter check mode again.)	② Foreign matter attached to the tip of one of the speed sensors of each wheel
97	Steering sensor output error (SS1, SS2, SSC)	Drive straight for at least 10 seconds at a speed of 30km/h or higher, then turn the steering wheel 90 degrees to the left and right after the vehicle has stopped and return to straight-line driving.	① Steering sensor disconnection or short circuit ② Steering sensor wire harness disconnection or short ③ Steering sensor installation defective

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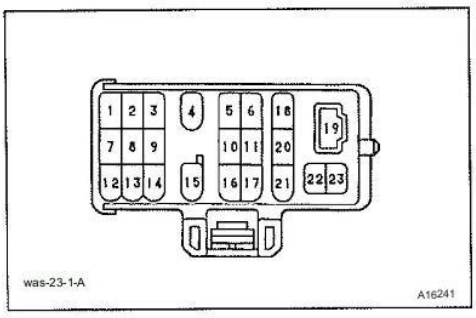
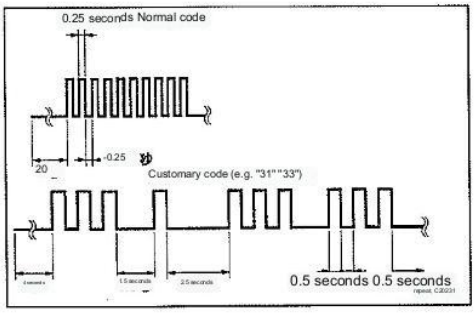
<Reference> - For code number 96 (speed sensor noise), the code is not memorized at first, but is memorized only when an abnormality is detected.

JB1937





T0048163

troubleshooting

Diagnosis check

(reference) The diagnosis code is indicated by the 4WD warning lamp.

Output.

1 Diagnosis code reading

Reading by combination meter

(1) Remove the short pin of the diagnosis connector.

(2) Short between 11 (Tc) 3 (E_1) terminals.

(3) Turn on the ignition switch.

· Read the number of flashes of the 4WD warning lamp.

· When outputting multiple codes, use the one with the smallest code number. <カ>

Output in order.

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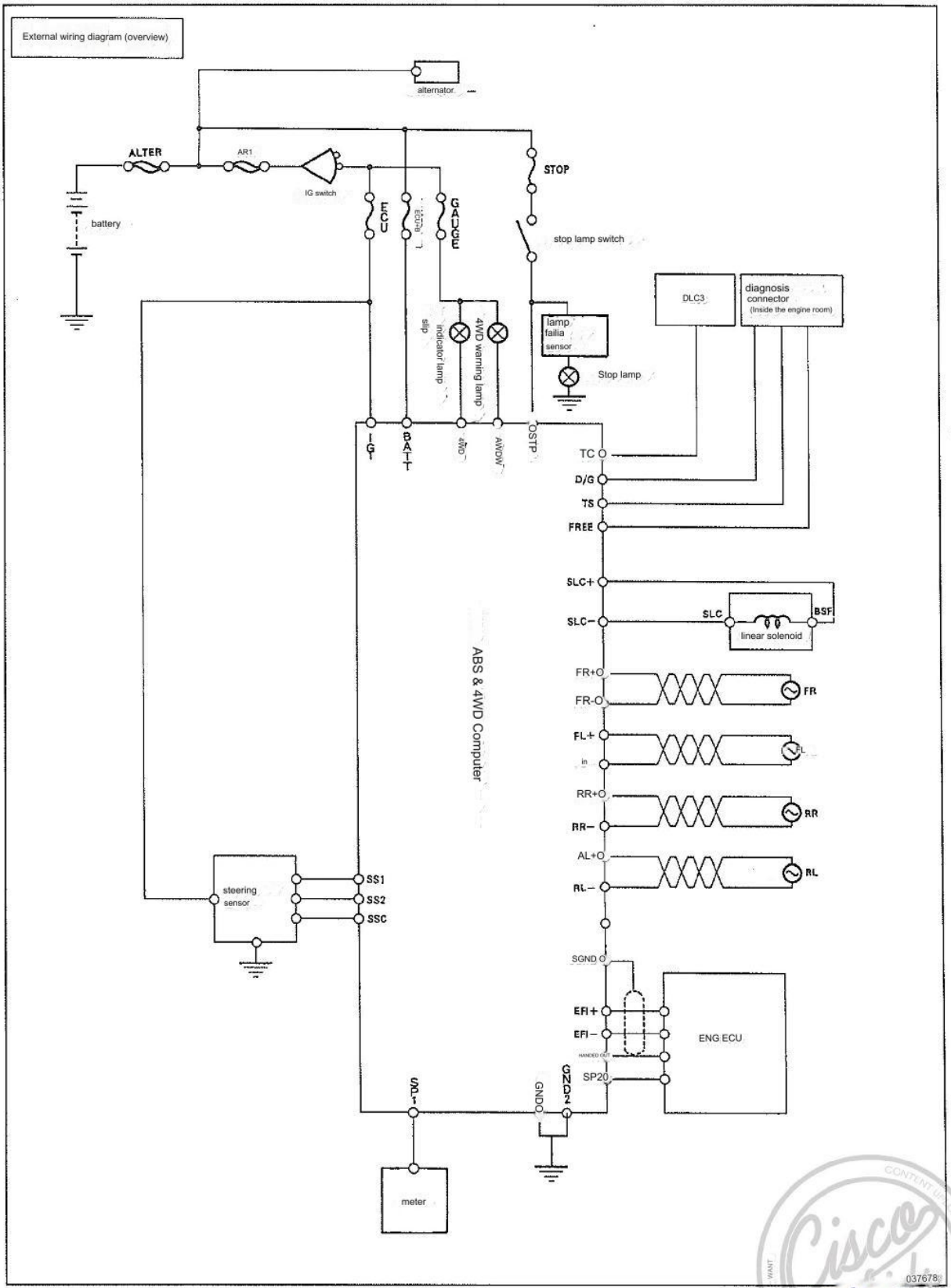

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2 Diagnosis code list

code number	Diagnostic items Diagnosis details ① Diagnostic conditions ② Abnormal condition abnormal period	Inspection area
81	Communication line error with ENG ECU ② TRA communication line abnormality when IG1 voltage is 9.5V or higher ③ 5 seconds or more	· Computer wire harness disconnection or short circuit ·computer
96	Speed sensor system abnormality ① Ignition switch ON ② When a speed sensor abnormality is detected in the ABS CPU	See "Brake" and "Anti-lock Brake System"
97	Steering sensor abnormality ① Ignition switch ON ② Steering sensor signal does not change when turning ③ 0.8 seconds or more	· Steering wire harness, connector · Steering sensor ·computer
98	Linear solenoid disconnection, short (SLC) ① When the IG1 voltage is 9.5V or higher, the solenoid indicated oil pressure is 5.8kgf/cm² ② Linear solenoid disconnection or short circuit ③ More than 1 second	· Wire harness between transfer linear solenoid and computer · Transfer linear solenoid ·computer
99	4WD control aborted ②· The computer has determined that the amount of work of the operation limit clutch has exceeded the predetermined value. · The computer has determined that tires with significantly different load radii are installed.	· Test mode 96 output confirmation · Transfer control hydraulic pressure check · Check installed tires (regular size or not) ·computer
constant light	computer abnormality ② Computer internal abnormality	———

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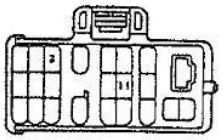
Diagnosis code deletion method

Cannot be erased by disconnecting using normal erasing methods (battery, fuse, etc.).

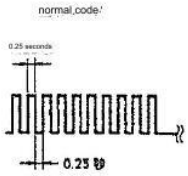
Erasing by operating the brake pedal

(1) Diagnosis connector 11 (Tc) Short-circuit the terminals and turn on the ignition switch. ↔ 3 (E_1)



(2) Depress the brake pedal 8 or more times in 5 seconds.

(3) Check that a normal code is output.



*ABS diagnosis code will also be deleted.

C36303

TDD4R184

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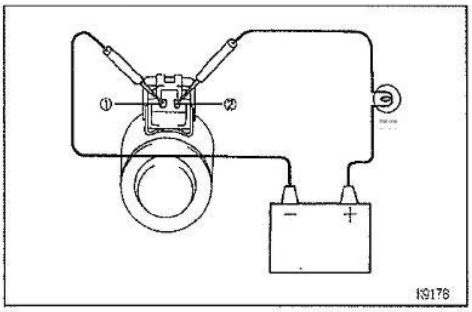
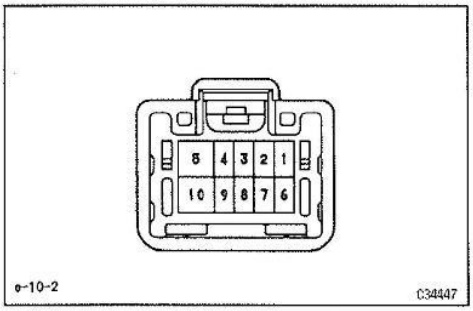


I9178



e-10-2 C34447

Individual inspection

transmission solenoid

1 Linear solenoid operation check

(1) Connect the battery to the ② terminal via a 12V-8W valve, and check that the valve in the solenoid moves when the battery is connected to the ① terminal.

2 Resistance check

(1) Measure the resistance value between terminals ①→②.

Standard value 5.0~5.62

steering sensor

1 Resistance check

(1) Remove the steering sensor.

(2) Connect the battery to the 1 (IG) terminal and the 2 (ESS) terminal of the connector.

Measurement point [terminal number (terminal name)]		Benchmark
8 (SS1) 7 (SS2)	2 (ESS)	Repeat 0∞ and about 1002
6 (SSC)		· Neutral position ±27°...8 · Other positions ••• .....100 Ω

TB1932

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Indicator lamps
(see ``Electrical'' ``Meters & Gauges")

Speed sensor (F
brake" - "Anti-lock brake system" - "Individual inspection")

Stop lamp switch
(Refer to "Brake" - "Anti-lock brake system" - "Individual inspection")

ABS & 4WD computer (see
``Brake'' - ``Anti-lock brake system'' - ``Individual inspection'' {)

TD0481BS

extension housing

Rear oil seal

Preparations

S S T

	09308-00010	Oil seal puller	For oil seal removal
	09325-40010	transmission oil plug	For oil seal installation

grease

Toyota genuine MP grease No.2	30204	For oil seal lip application
Toyota genuine auto fluid type T-III	30312	For automatic transmission injection

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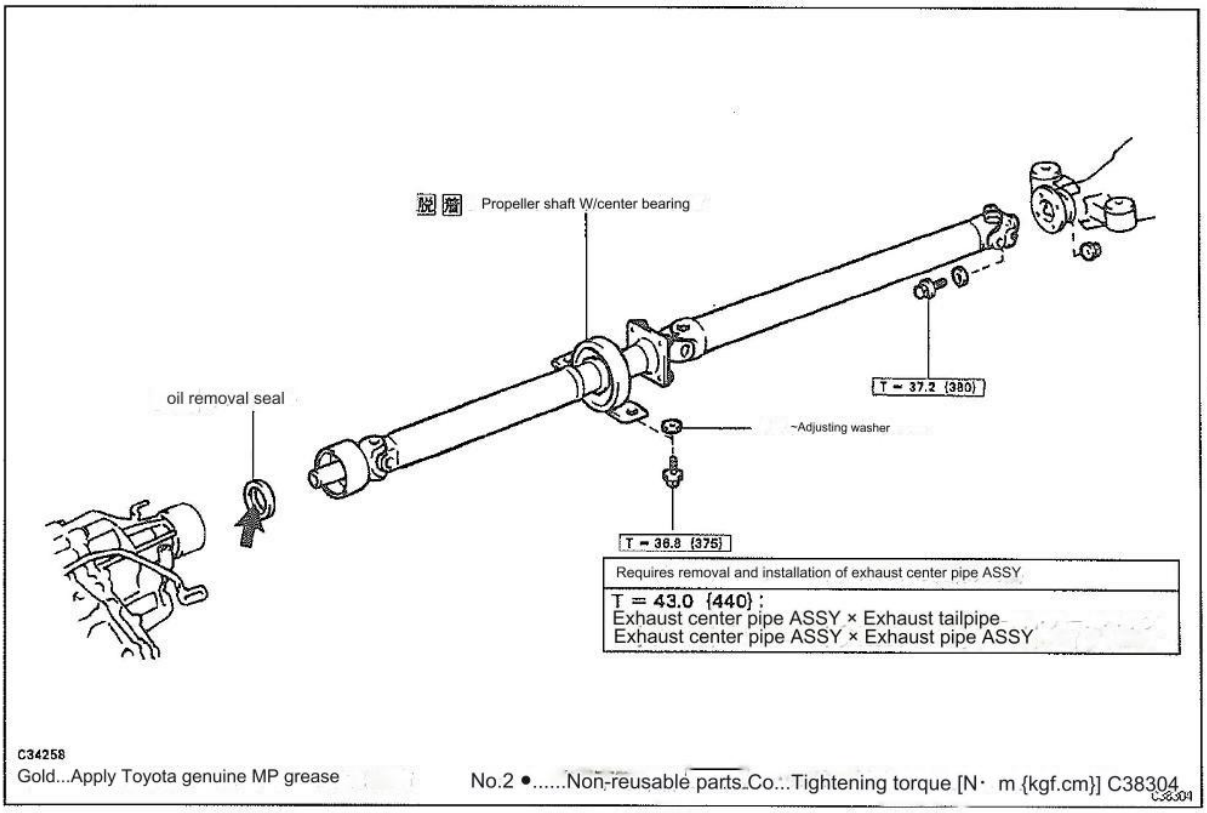
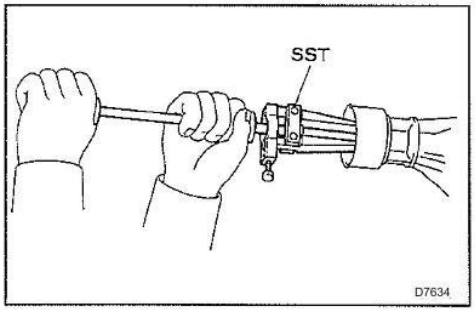
T0048188

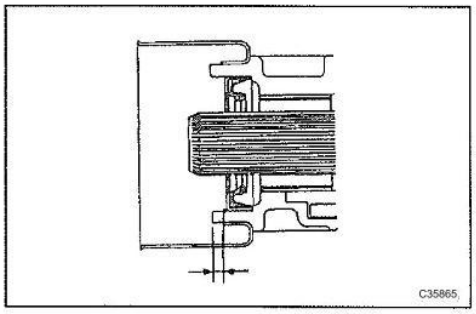
extension housing

rear oil seal

Detachment configuration diagram







Extension housing rear oil seal replacement

1 Draining automatic transmission oil <Reference>

Measuring the amount of oil drained will serve as a reference when refilling the oil.

2 Removal of rear propeller shaft

(See "Propeller Shaft" and "Rear Propeller Shaft")

3 Oil seal removal

(1) Remove the oil seal using SST.

S S T 09308-00010

4 Oil seal installation

(1) Apply MP Grease No.2 to the lip of the new oil seal.

(2) Using SST, drive in the new oil seal to the position shown in the diagram.

SST 09325-40010

<Reference> Driving depth 2.3~2.7mm

5 Installing the rear propeller shaft

(See "Propeller Shaft" - "Rear Propeller Shaft")

6 Automatic transmission oil injection

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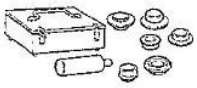
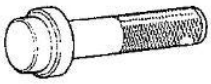
F0046187

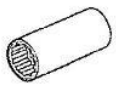
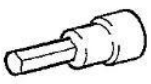
front oil seal

Preparations

S S T

	09213-54015	crankshaft pulley holding tool	Removing and removing companion flange mounting nuts
	09308-00010	Oil seal puller	For oil seal removal
	09316-60011	Transmission & Transfer Bearing Replacer	For oil seal installation
	(09316-00011)	ribracer pipe	For oil seal installation
	(09316-00071) Replacer F		For oil seal installation
	09330-00021	Companion flange holding tool	For companion flange retention
	09517-36010	Rear axle shaft oil seal rib racer	For companion flange oil seal installation

tool

	09060-20100	Deep socket wrench (30mm)	Removing and removing companion flange mounting nuts
	09040-00010	Hexagon wrench set	
	(09043-20060) Socket hexagon wrench 6		Front propeller shaft removal and removal

Oils and fats/others

Toyota genuine MP grease No. 2 30204	For oil seal lip application
Toyota genuine auto fluid type T-III 30312	For automatic transmission injection
Toyota genuine engine oil 32103	For applying front propeller shaft bolts

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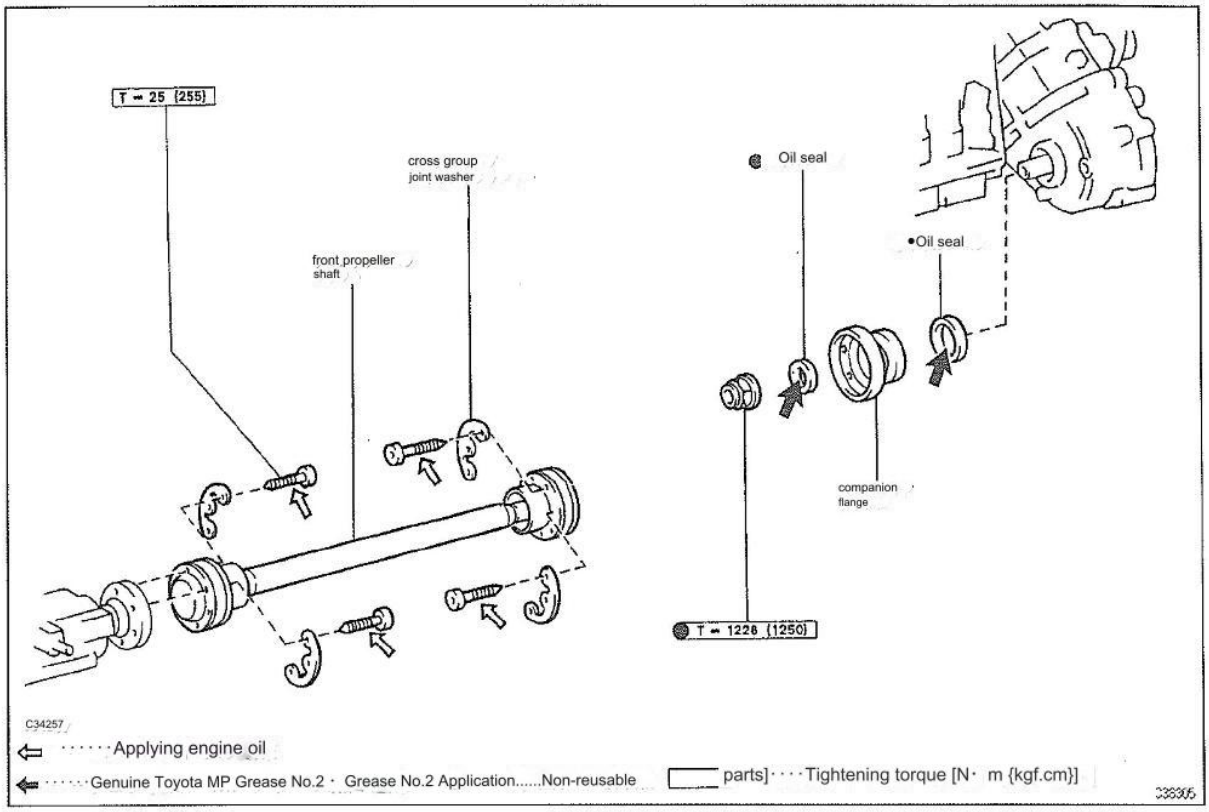
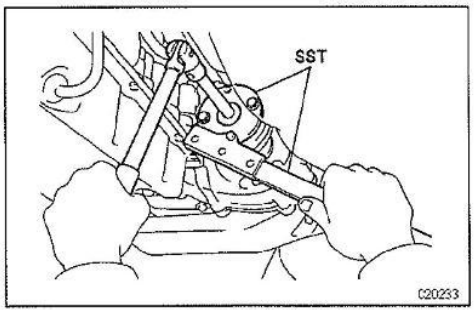
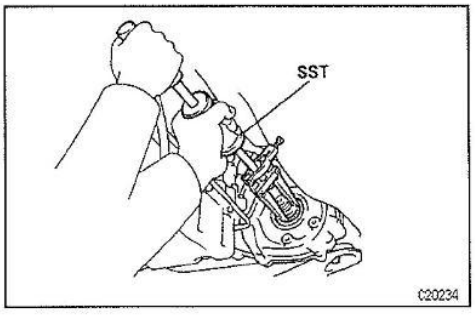
TG046188

front oil seal

Detachment configuration diagram







Points to note when installing and removing the front oil seal

1 Removal of companion flange

(1) Use a chisel to unscrew the lock nut.

(2) Using SST and deep socket wrench (30mm), remove the lock nut and remove the flange.

S S T 09213-54015 09330-00021

(3) Using a screwdriver, remove the oil seal from the flange.

2 Oil seal removal

(1) Remove the oil seal using SST.

S S T 09308-00010

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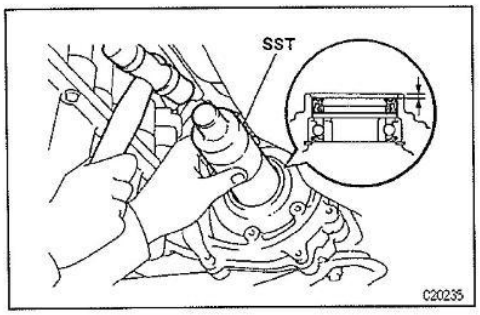


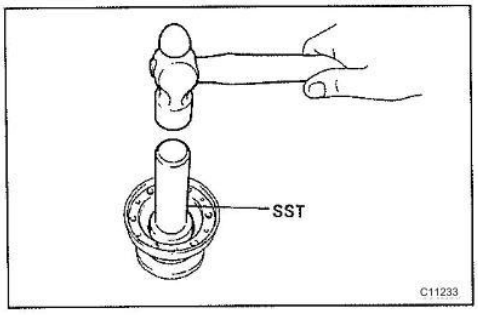
3 Oil seal installation

(1) Apply MP Grease No.2 to the lip of the new oil seal.

(2) Using SST, drive in the new oil seal to the position shown in the diagram.

S S T 09316-00011 09316-00071

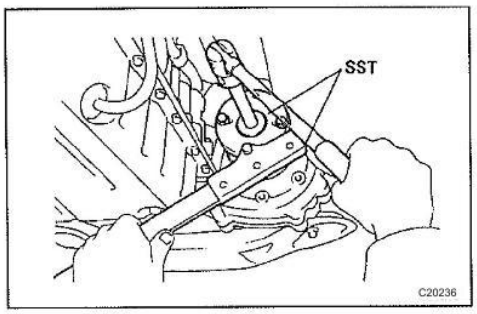
(Reference) Driving depth 5.8~6.2mm



4 Companion flange installation

(1) Install a new oil seal onto the flange using SST.

S S T 09517-36010



(2) Attach the flange to the output shaft and tighten the new lock nut using the SST and deep socket wrench (30mm).

S S T 09213-54015 09330-00021

(3) Tighten the lock nut.

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8 propeller shaft

Front propeller shaft 8-2
Preparations ..... 8 — 2
Front propeller shaft 8-3
Detachment configuration diagram ..... 8 — 3
Front propeller shaft inspection/ 8-3
rear propeller shaft ..... 8 — 4
Preparations ..... 8 — 4
Rear propeller shaft 8-6
Detachment configuration diagram ..... 8 — 6
Exploded diagram ..... 8 — 7
Rear propeller shaft disassembly and assembly
Points to note during work.....8-8
Propeller shaft inspection...8-8 .....
Sliding shaft dust cover replacement...8-8 ....

8

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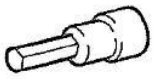
front propeller shaft

Preparations

tool

	09040-00010 Hexagon wrench set	
	(09043-20060) Socket hexagon wrench 6	Propeller shaft removal and removal
V block 20401		For inspecting propeller shaft runout

instrument

Dial gauge 21201	For inspecting propeller shaft runout

Oils and fats/others

Toyota genuine engine oil 32103	For applying to bolt threads

8

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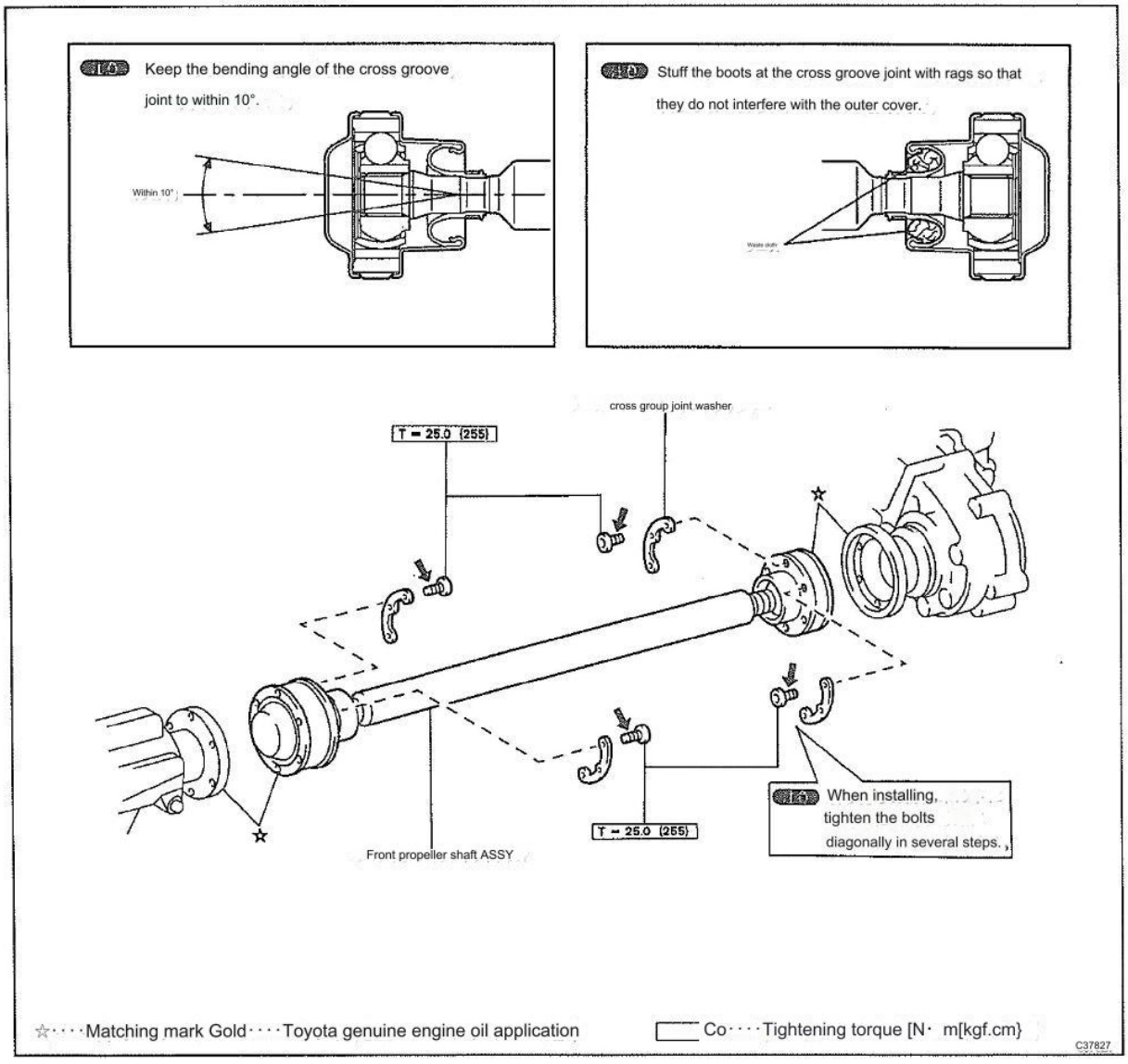
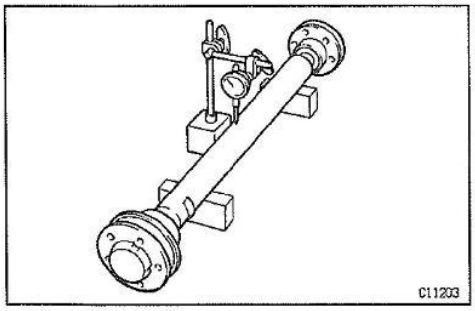
T0048674

front propeller shaft

Detachment configuration diagram





Front propeller shaft inspection

1 Propeller shaft damage and runout inspection

Runout limit 0.8mm

2 Cross groove joint inspection

(1) Move the joint up and down, left and right, and in the axial direction, and check that there is no unevenness or significant play.

(2) Check that the boots are free from cracks, damage, and grease leakage.

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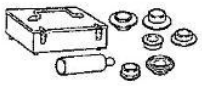
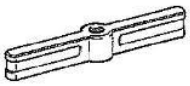
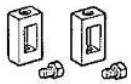
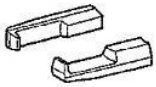
T0048682

rear propeller shaft

Preparations

S S T

	09316-60011 Transmission & Transfer Pairing Replacer	
	(09316-00011) Replacer pipe	Sliding just cover required
	09325-20010 Transmission oil plug	For preventing transmission oil leakage (excluding vehicles equipped with JZ engine)
	09325-40010 Transmission oil plug	For preventing transmission oil leakage (cars equipped with JZ engine)
	09330-00021 Companion flange holding tool	For fixing universal joint flan joke
	09950-40010 Puller B set	
	(09951-04020) Hanger 200	For universal joint flange separation
	(09952-04010) Slide arm	"For universal joint flange separation"
	(09953-04030) Center bolt 200 *	For universal joint flange separation
	(09954-04010) Arm 25	For universal joint flange separation
	(09955-04060) Crow №6	For universal joint flange separation
	(09957-04010) Attachment	For universal joint flange separation

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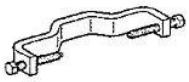	(09958-04010) holder	For universal joint flange separation

tool

Chisel 11101	For uncaulking and clinching nuts
V block 20401	Intermediate shaft and propeller "For shaft runout inspection"

instrument

Dial gauge 21201	For checking intermediate shaft and propeller shaft runout

Oils and fats/others

Toyota genuine MP grease No. 2 30204	For coating each part

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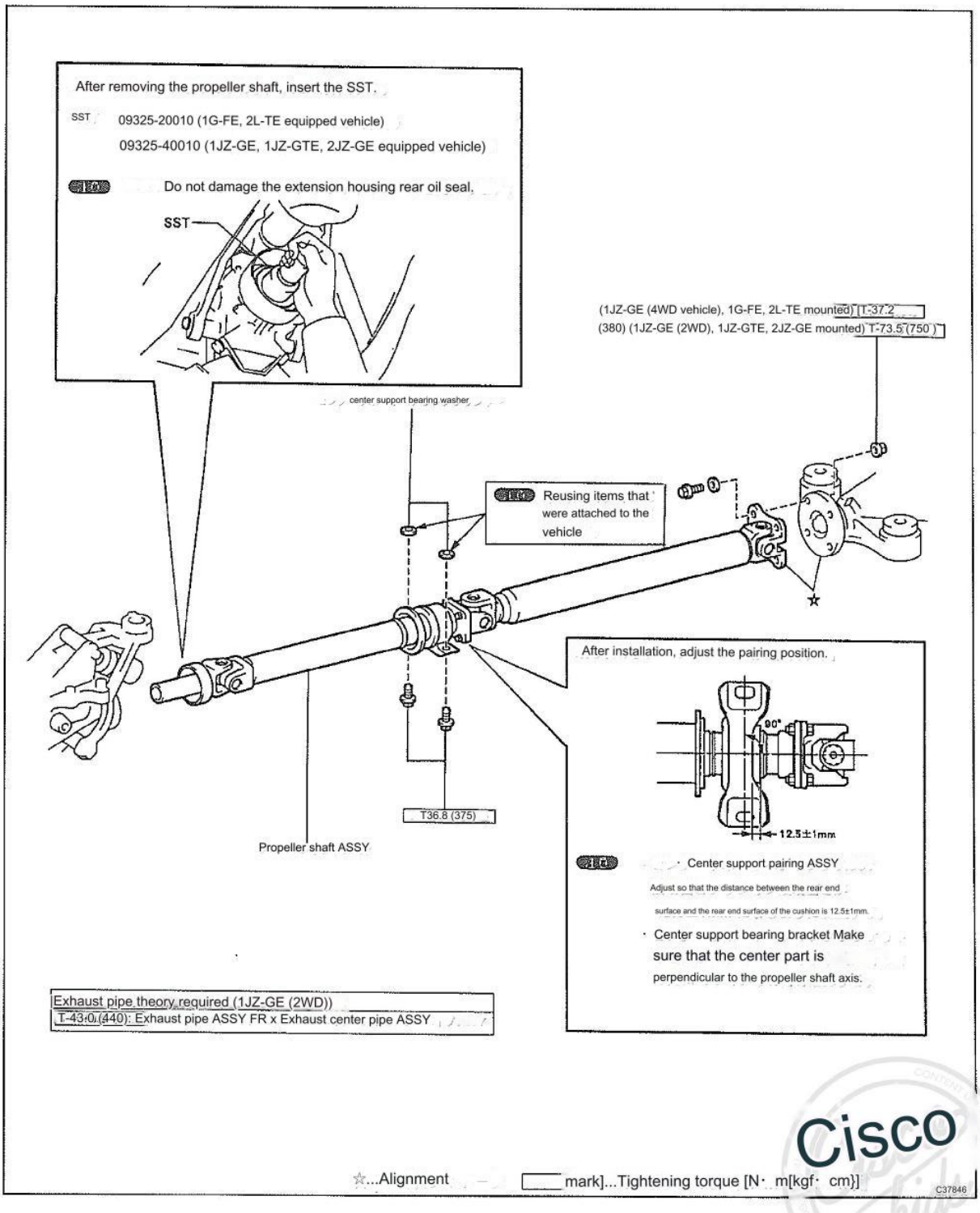
T00458&3

rear propeller shaft

Detachment configuration diagram



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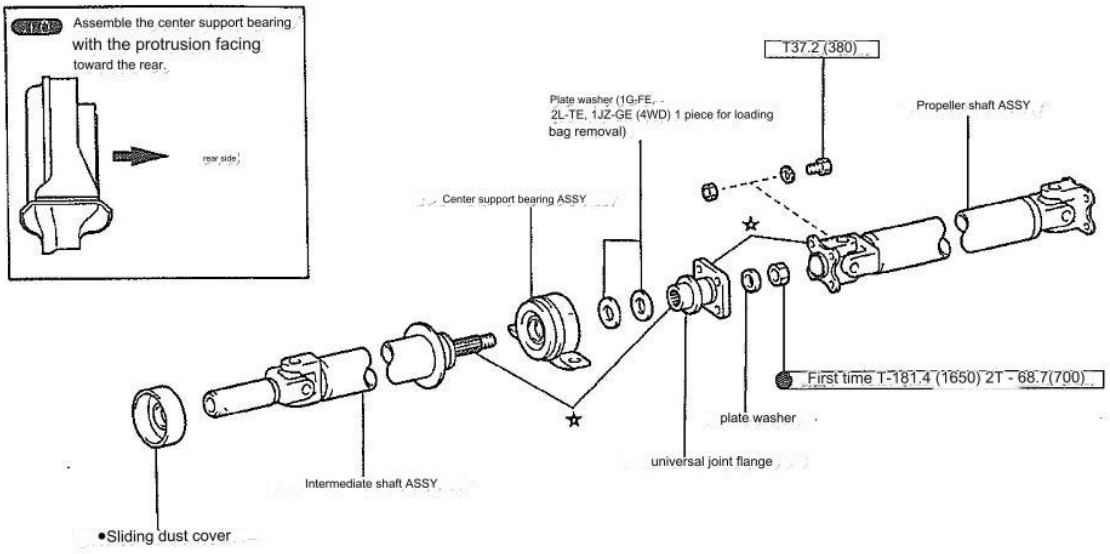
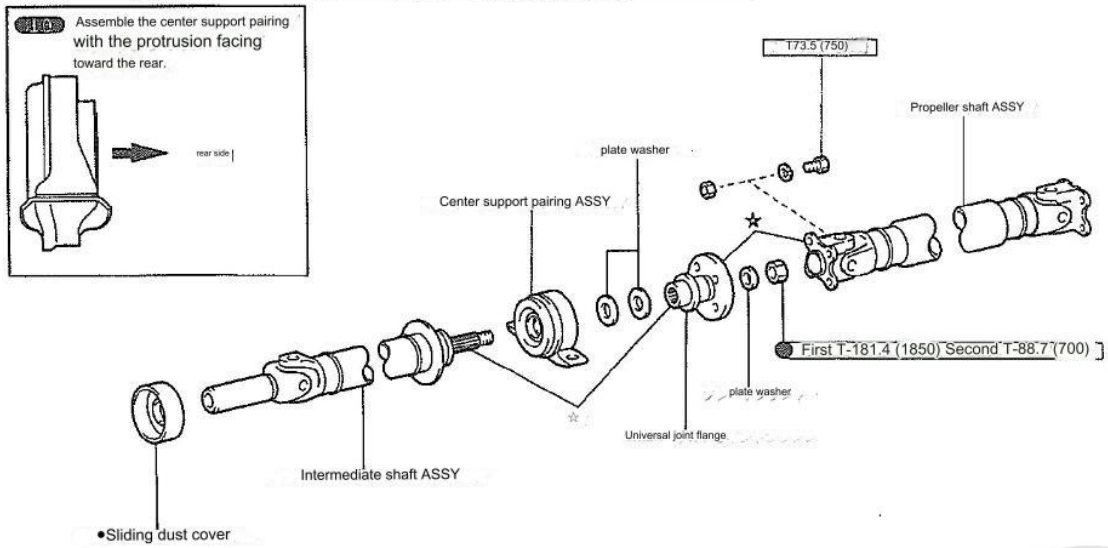
Exploded diagram

T-joint type (vehicles equipped with 1G-FE, 2L-TE, 1JZ-GE)



V joint type (vehicles equipped with 1JZ-GE (2WD), 1JZ-GTE, 2JZ-GE)



☆····Alignment mark ●····Non-reusable parts ····Tightening torque [N-m (kgf-cm)]

C37828

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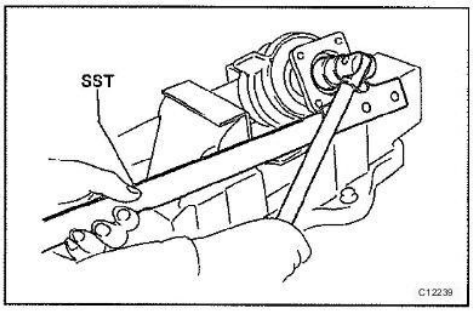

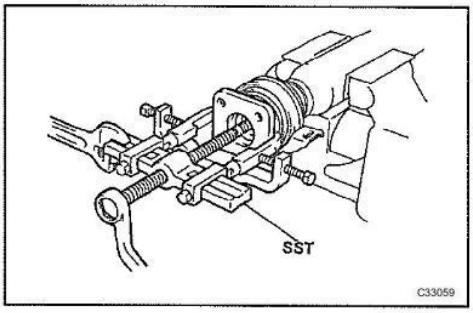

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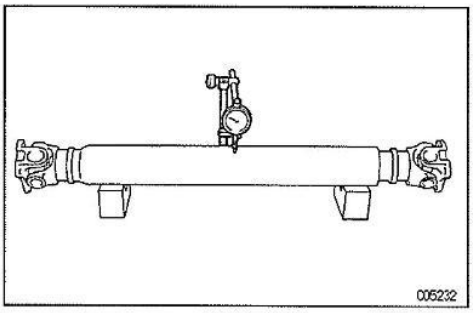

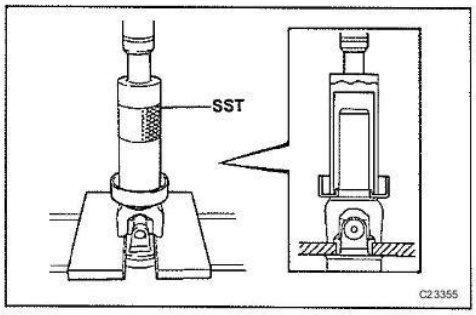

Points to note when disassembling and assembling rear propeller shaft

When securing the propeller shaft in a vise, do not tighten the vise too tightly.

1 Universal joint flange ASSY attachment/detachment

(1) Using SST, fix the flange and remove the nut.

S S T 09330-00021

When assembling, tighten the new nut once, loosen it, and then tighten it again to the specified torque.

(2) Using SST, remove the universal joint flange.

S S T 09951-04020 09952-04010 09953-04030 09954-04010 09955-04060 09957-04010 09958-04010

Apply oil to the threaded part and tip of the SST center bolt (09953-04030) before use.

Propeller shaft inspection

1 Check the runout of the intermediate shaft and propeller shaft

(1) Place the shaft on the V block and measure the runout with a dial gauge.

Runout limit 0.8mm

2 Spider bearing inspection

(1) Rotate the spider and check that it is not caught.

(2) Shake the spider strongly with both hands in the axial and right angle directions and check that there is no play in the joint.

(Reference) Since it does not require disassembly, if there is any play, replace the propeller shaft ASSY or intermediate shaft ASSY.

3 Inspecting the center support bearing (1)

Rotate the bearing while applying force from the center to the outer circumference. Check for looseness and catch.

(2) Inspect the rubber parts for scratches, cracks, and spring dislocation.

(3) Check that there are no cracks or deformations in the bracket of the center support bearing.

sliding shaft dust cover replacement

1 sliding shaft dust cover replacement

(1) Fix the intermediate shaft in a vise.

(2) Remove the dust cover using a screwdriver and hammer.

(3) Press in the new dust cover using SST and press. SST 09316-00011 Cisu

Do not deform the dust cover.

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9 Suspension & Axle

wheel alignment 9-3
Preparations 9
wheel alignment 3 9- 4
Pre-inspection 9-4
Front wheel alignment inspection and adjustment 9 - 4
Rear wheel alignment inspection and adjustment 9-6
front suspension 9-9
Preparation ..... 9 — 9
items Front shock absorber... 9-10
Decomposed configuration diagram 9-10
Points to note when installing
and removing front shock absorber W/coil spring 9-12
front shock absorber
W/Coil spring disassembly... 9-13
Shock absorber ASSY inspection 9-13
How to dispose of gas-filled shock absorbers 9 13
front shock absorber
W/Coil spring assembly...9 14
Upper suspension arm... 9-16
Decomposition diagram 9-16
Points to note when installing and removing the upper suspension arm ... 9-18
Upper suspension arm ball joint inspection...9-18
Lower suspension arm disassembled 9-19
diagram 9-19
□ Points to note when installing and removing the war suspension arm 9-21
□Warball joint ..... 9 - 22
Deconfiguration diagram ..... 9 - 22
Pre-inspection (on-vehicle ..... 9 - 23
inspection) Points to note when installing and removing the lower ball joint ..... 9 - 23
Lower ball joint inspection/ ..... 9 - 23
Stabilizer bar & link 9- 24
Cultivation configuration diagram ..... 9 - 24
Stabilizer link inspection/ ..... 9 - 24
front axle 9-25
Preparations 9-25
Front axle hub (2WD vehicle) ..... 9 - 28
Disassembled configuration ..... diagram 9 - 28
Axle hub bearing inspection before disassembly... ..... 9 - 29
steering knuckle
Points to note when installing and removing W/axle hub... 9 29
Steering knuckle W/ axle hub disassembly 9-29
Steering knuckle W/ axle hub assembly ... 9-31
hub bolt replacement 9-32
Front axle hub (4WD vehicle) 9 33 ..... Exploded
diagram ..... 9 - 33
Front axle hub pre-disassembly inspection/ 9-34
steering knuckle
Points to note when installing and removing W/axle hub ... 9-34
Steering knuckle W/axle hub disassembly 9 35
Steering knuckle W/axle hub assembly ... 9-35
hub bolt replacement 9-36
rear suspension 937
supplies 9-37
Rear shock absorber 9-39
Exploded configuration diagram 9-39
rear shock absorber
W/Points to note when installing and removing coil springs... 9-40
rear shock absorber
W/Coil spring disassembly...9 40
Rear shock absorber inspection... 9-41
Gas-filled shock absorber disposal method
9-41 Rear shock absorber
W/Coil spring assembly...9-41
upper control arm ..... 9 - 42
Exploded configuration diagram 9-42
Pre-inspection ..... 9 — 43
Upper control arm ASSY
Points to note during attachment/detachment work 943
Upper control arm ball joint inspection ... 9 — 43
Strut rod & suspension arm...944 Exploded
diagram 944
Strut Rod &
Points to note when installing and removing suspension arms
9-45 Rear strut rod bush replacement
(Excluding tourer, Luran series) ... 9-45
Suspension arm No.1 ball joint inspection 9-45
Stabilizer bar & link 9-46
Deconfiguration ..... diagram 9-46
Stabilizer link inspection/ ..... 9 - 46
rear axle 9 47
Preparations 9-47
Rear axle shaft 9-50
Demolition configuration diagram 9-50
Exploded configuration diagram 9-51
Rear axle shaft bearing inspection 9-51
rear axle carrier
W/ Points to note when installing and removing rear axle
shaft 9-51 Rear axle carrier
W/ Rear axle shaft disassembly 9-52
rear axle carrier
W/ Rear axle shaft assembly...9-53
hub bolt replacement 9-54

9

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Skyhook TEMS Preparation ..... 9 - 55
Items 9-55
Parts layout 9-57
Absorber control computer 9-56 .....
Fallout configuration diagram ..... 9 — 57
Troubleshooting 9-58 ..... How
to proceed with troubleshooting 958
Diagnosis check ..... 9 - 59
Circuit diagram 9-60
Troubleshooting by diagnosis code ... 9-61
Functional check 9-63
*TEMS SPORT" indicator inspection... TEM ..... 9 — 63
terminal output inspection (circuit tester inspection) ... 9 — 63
Damping force control status check 9-63
Control function check ..... 9 - 64
Test mode inspection 9-66
Individual inspection 9 69
stop lamp switch ..... 9 - 69
speed sensor 9-69
Engine speed sensor 9-69
Steering position sensor 9-69
Absorber control switch 9-69
absorber control actuator 9-69
Absorber control computer..... 9-70

9

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TC043536

wheel alignment

Preparation product

tool

brake pedal pressure 11901		For holding foot brake

instrument

	TB-322	Rear wheel alignment attachment Treated like a banzai	Front and rear wheel alignment measurement for
	AA-828	roller measuring head Treated as Banzai Co., Ltd., Iyasaka Co., Ltd.	For measuring tire runout
Dial gauge 21201			For measuring tire runout
camber caster king pin gauge 20601			For wheel alignment measurement
toe-in gauge 21301			For toe-in measurement
turning radius gauge 21001			For wheel alignment measurement
tire pressure gauge 21101			For tire pressure measurement

9

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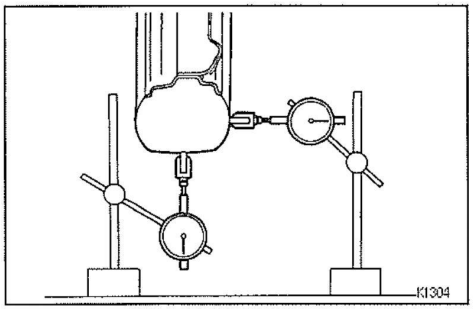
T0046539



wheel alignment

Pre-inspection

1 Tire size, wear status check, and tire air pressure check

Standard value Refer to tire pressure label

Criteria Inspect for abnormal wear.

2 Suspension modification and damage inspection of various parts of the suspension

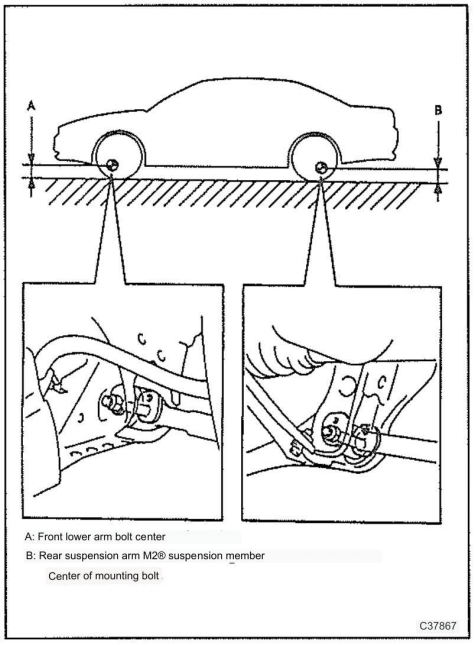
3 Tire runout check

Limit 3.0mm (vertical, horizontal)

4 Inspecting the tightening condition of bolts of each related part

5 Inspection of play in related parts 6 Inspection

of vehicle height



A: Front lower arm bolt center
B: Rear suspension arm M2® suspension member
Center of mounting bolt

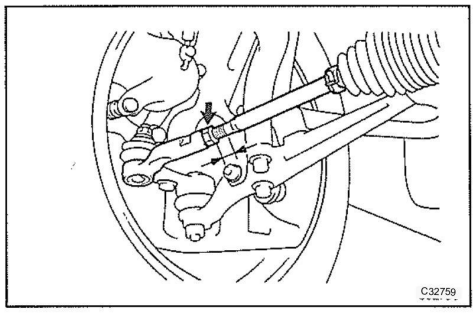
C37867

Standard value (when empty)

Model	Vehicle height [mm]	
	A dimension	B dimension
JZX101 series JZX100 series (Excluding Tourer S, Luran series Ri)	233	222
JZX100 series tourer S, V (ルラーン系)	228	217
GX100 series, LX100 series	238	222
JZX105 series	222	232

When tire radius is 290mm

JB3159



C32759

Front wheel alignment inspection and adjustment

1 Toe-in inspection and adjustment

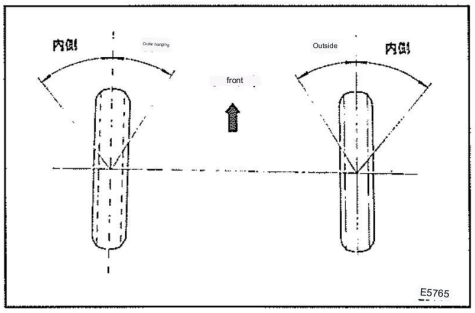
Inspection standards 値 1±2mm (2WD vehicle)

0±2mm (4WD vehicle)

Adjustment criteria 1±1mm (2WD vehicle)

0±1mm (4WD vehicle)

Note The difference in length between the left and right threads of the rack end is within 1.5mm.



E5765

2 Wheel turning angle check

Standards Inside 41° (2WD vehicle)

40° ± (4WD vehicle)

Outside 34° (2WD vehicle) <Reference>

33° (4WD vehicle) <Reference>

•Caution there is a difference in the turning angle between the left and right sides, check and adjust the

CONT If
toe-in.
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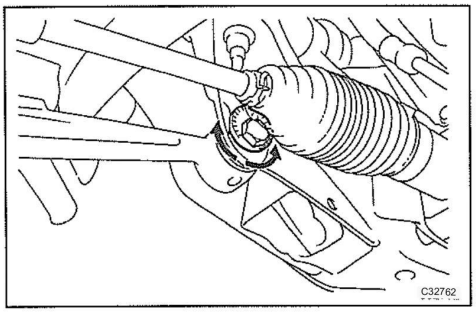
3 Check camber, caster, and kingpin angle

Inspection standard value

	camber	caster	kingpin angle
2WD car (Excluding Tourer V S, Luran series)	0°00' 45'	5°45' 45'	9°00' ±45'
2WD car (Tourer S, Luran series V)	-0°15'45'	5°45' 45'	9°00' 45'
4WD vehicle	-0°15' 45'	4°30' 45'	8°45' 45'

Camber left and right difference limit: within 30'

JE3160



4 Camber adjustment

(1) Lower arm No.1 Rotate the rear camber adjustment cam No.1. and adjust the camber.

9

Adjustment standard 值

	camber
2WD (excluding Tourer S, V, Luran series)	0°00' ±30′
2WD vehicle (Tourer S, V, Luran series)	-0°15' 30'
4WD vehicle	-0°15' 30'

Left and right difference limit: within 30'

JB3156

(Note:) When adjusting camber, be sure to adjust caster and toe-in. Check. <Reference>

When the adjustment cam is rotated by one scale, the values will change as shown below. Change. · The camper changes by about 9′, and the caster changes by about 7.5′.

(2WD vehicle)

- Camber changes by about 5' and caster changes by about 5'.

(4WD vehicle)

(2) Tighten the camper adjustment cam nut.

T=184N·m {1880kgf·cm}

5 Side slip inspection

Standard height 05mm (per 1m)

(Caution: Be sure to set A/T vehicles to N range.

- Do not step on the brake on the tester.
- Do not operate the steering wheel on the tester.

If it is outside the standard value, check the front wheel alignment.

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Rear wheel alignment inspection and adjustment

1 Toe-in inspection

Inspection standards 2±2mm

2 Camber inspection

Inspection standard value

	camber
2WD car (Excluding Tourer S, V, Luran series)	-0°30'45'
2WD vehicles (Tourer S, V, Luran series)	-0°40' 45'
4WD vehicle	-0°15' 45'

Left and right difference limit: within 30'

JB3157

3 Camber, toe-in adjustment

Side slip inspection is not required.

(1) Carrier side of left and right rear suspension arms No. 1 and No. 2 (No. 1 - tip of stud bolt, No. 2 - tip of mounting bolt)

Mark accordingly.

(2) Center of the lower side of the mating surface of the drive shaft and differential

Add matching marks to the sections.

(3) Tips of left and right rear suspension arm No.1 stud bolts

Measure the distance between and the alignment mark on the drive shaft and find dimension A.

and (4)

Measure the distance between the ends of the carrier side mounting bolts of the left and right rear suspension arms No. 2 and the alignment mark on the drive shaft and use it as dimension B.

(5) Find the difference between dimensions A and B of each ring. (A dimension - B dimension)

(6) Find the left and right difference in (5).

Standard value within 4mm

(7) If the difference in (6) is outside the standard value, rear suspension arm No.1 and and No. 2 camber adjustment cam.

(8) Check the camber and toe-in again.

(9) Adjust the camber and toe-in by turning the camber adjustment cams of rear suspension arms No. 1 and No. 2.

Adjustment criteria

	camber	Toe-in
2WD car (except Touranso)	-0°30' 30'	2±1mm
2WD (ツアラー S, V) Rune type	-0°40' ±30'	
4WD vehicle	-0°15' 30'	

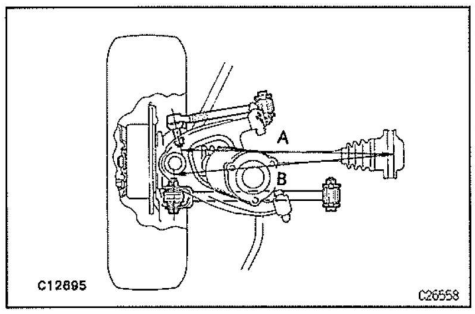
Left and right difference limit: within 30' (camber)

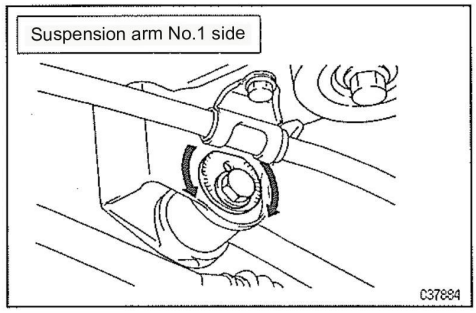
JE3158

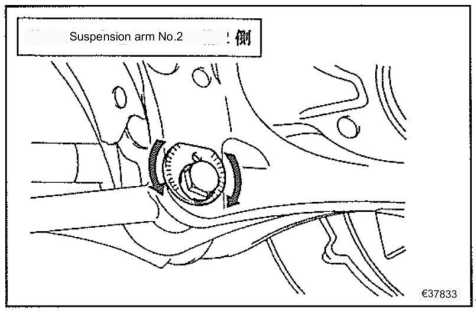
(Ten) Camber adjuster for rear suspension arms No. 1 and No. 2

Tighten the stock cam.

T=75N·m {765kgf·cm}







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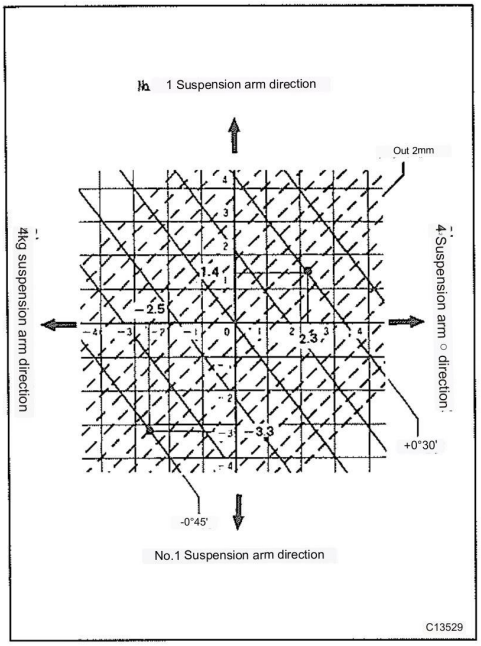

Camber, toe-in adjustment example

Reference value: Toe-in 2mm
Camber 0°25′

measurement: Toe-in 6mm
Camber 0°55' (right wheel)
Camber 0°20' (left wheel)

Deviation from standard value

Toe-in	4mm in direction (2mm on one side)
Camber 0°30′	on the right negative side
	Left positive side 0°45'

Adjust by turning the camber adjustment cam referring to the chart on the left (camber, toe-in adjustment diagram).

right side

Turn the right No. 1 arm approximately 1.4 scales in the direction.
Turn the right No. 2 arm approximately 2.3 scales in the direction.

left

Turn the left No. 1 arm in the 10th direction by about 3.3 increments.
Turn the left No. 2 arm in the 10th direction

2.5 scales. (8) Tighten the camber adjustment cam nuts of rear suspension arms No. 1 and No. 2.

T=75N•m {765kgf•cm}

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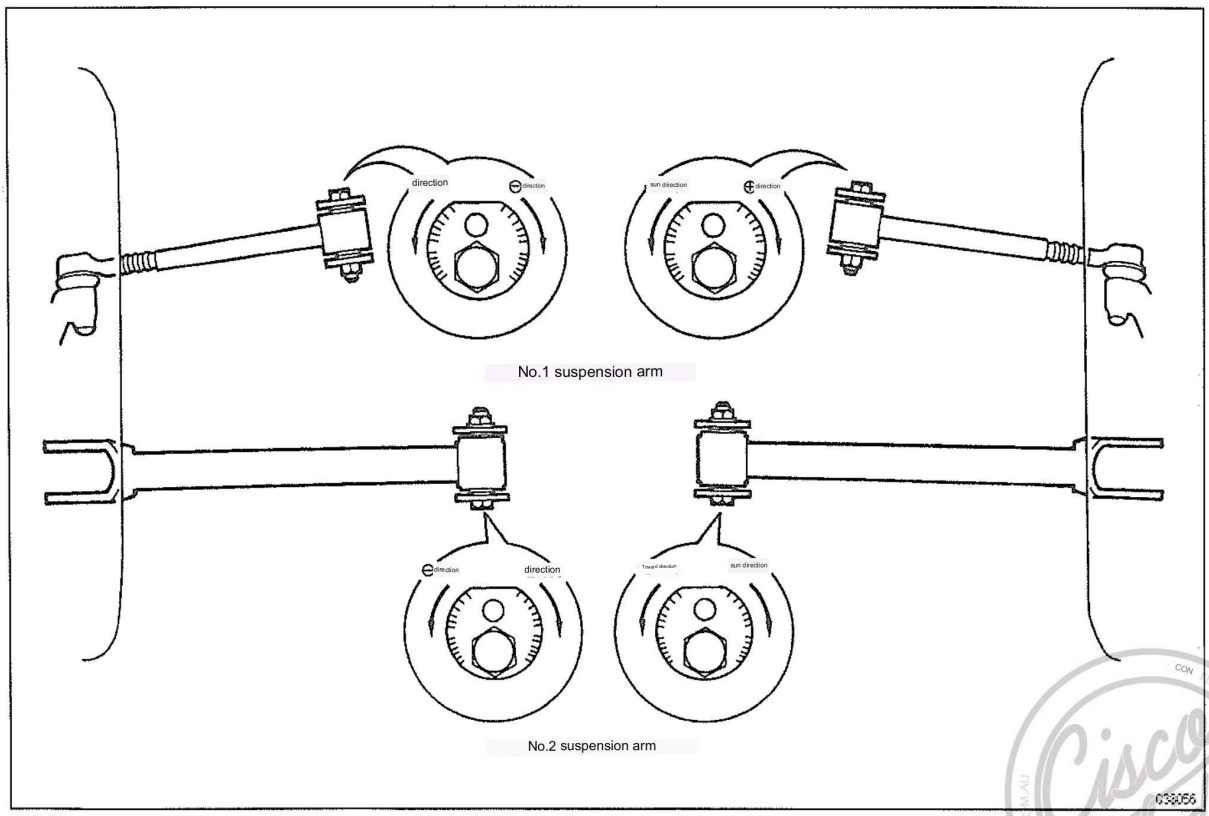

circular
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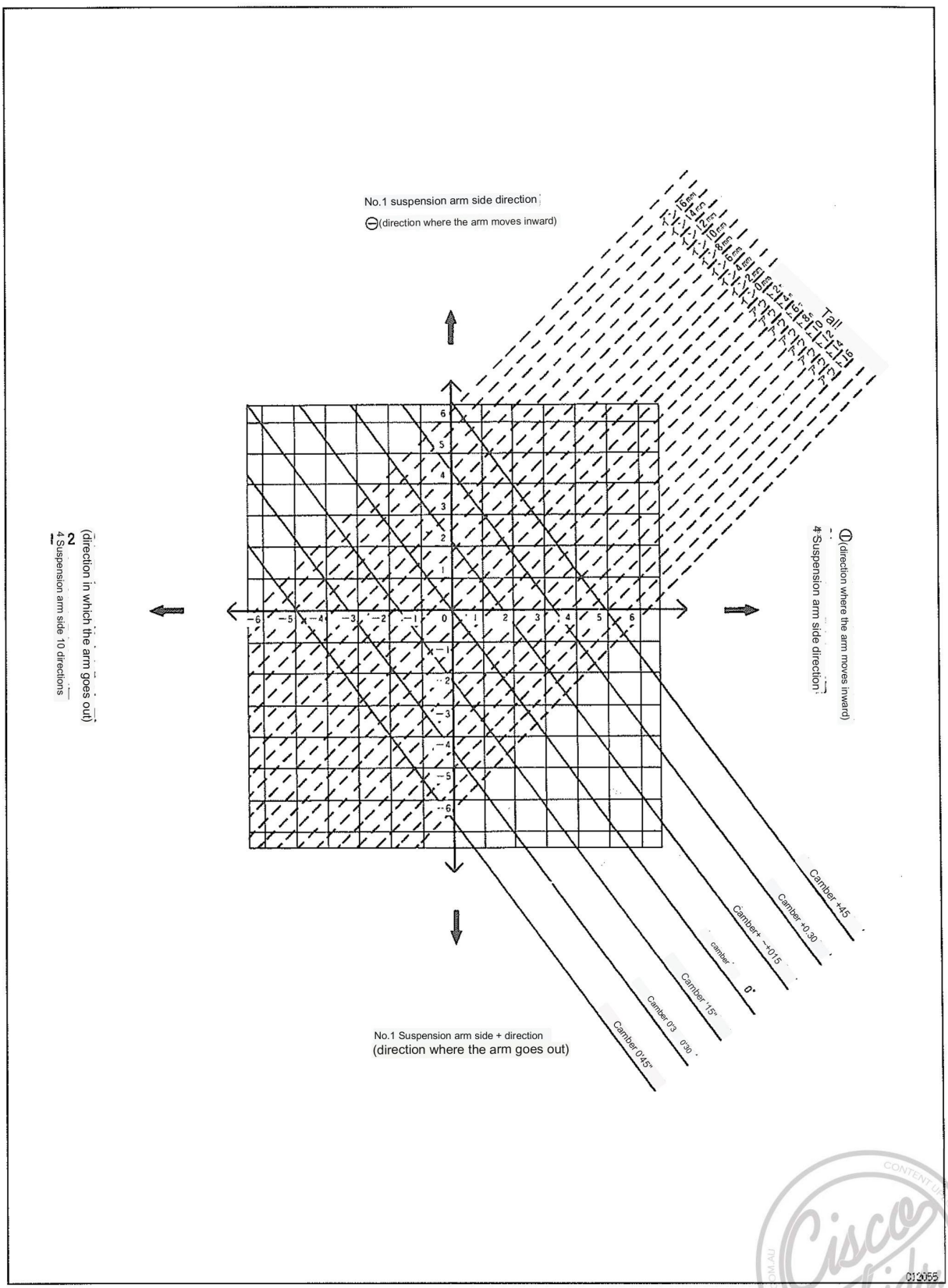

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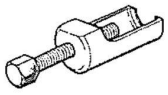
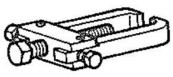
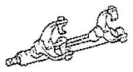
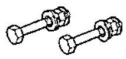
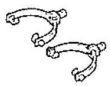
steamed noodles

T0048405

front suspension

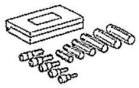
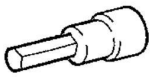
supplies

S S T

	09610-20012	Bitman Arm Blur	· For ball joint separation • Tie rod end separation 用
	09628-62011	Ball joint puller	For separating ball joints
	09727-30021	coil spring compressor	For coil spring compression
	(09727-00010)	Bolt set	For coil spring compression
	(09727-00021)	Arm set	For coil spring compression

9

tool

	HSC-16DCT	Spring Compressor Treated as Banzai Co., Ltd. Treated as Iyasaka Co., Ltd.	For coil spring compression
	09040-00010	hexagon wrench set	
	(09043-20050)	Socket hexagon wrench 5	Stabilizer link removal and removal
Socket wrench (30mm) 10102			Removing and removing axle hub lock nut (4WD vehicle)

計 vessel

Dial gauge 21201	For checking play in warball joints
Torque wrench [0~6N· m {0~60kgf· cm}] 20116	For ball joint inspection

Oils and fats/others

hacksaw 50603	For shock absorber disposal
木Piece 53601	For lower arm retention

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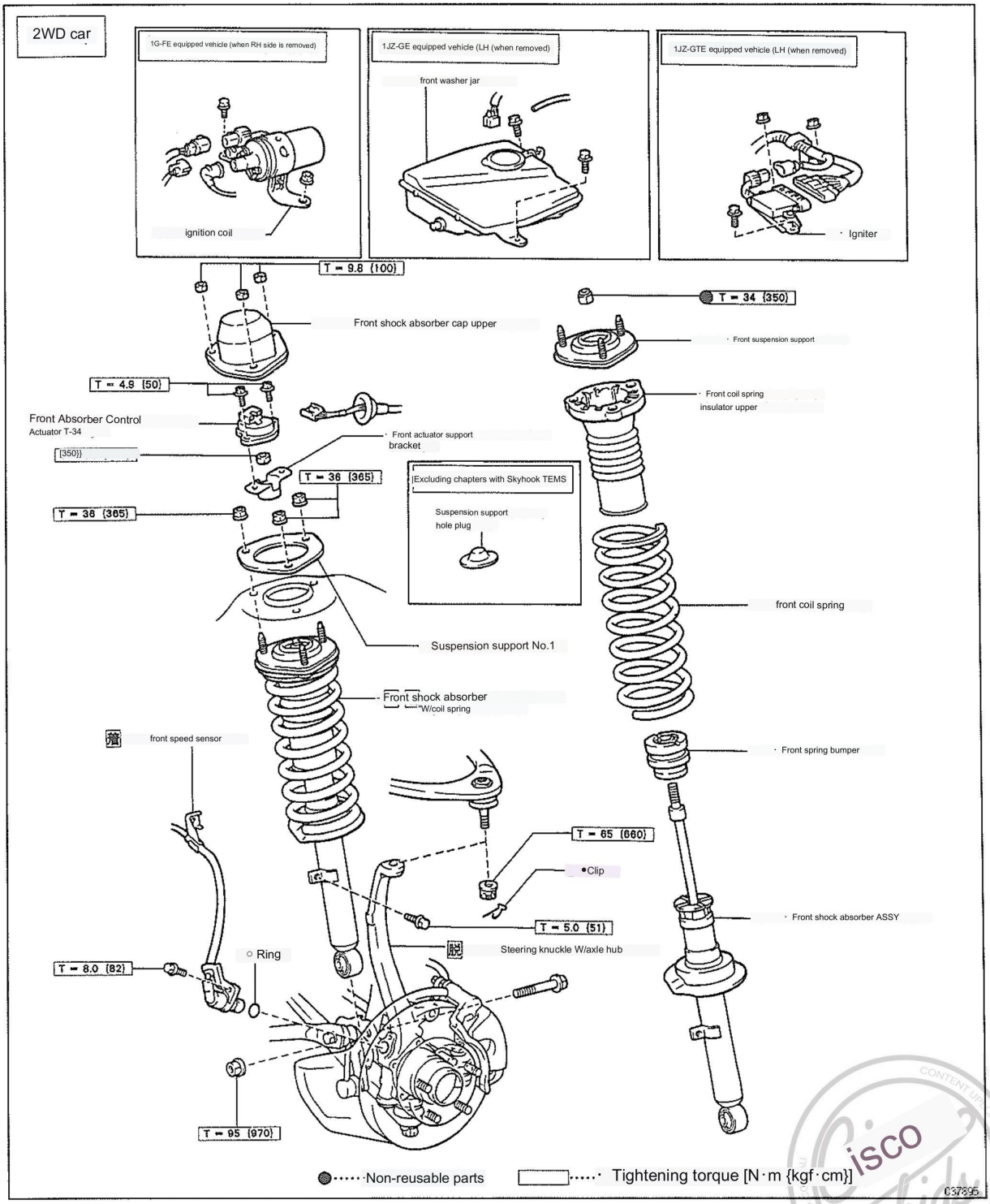
T0048406

Front Shock Absorber

Detachable exploded configuration diagram



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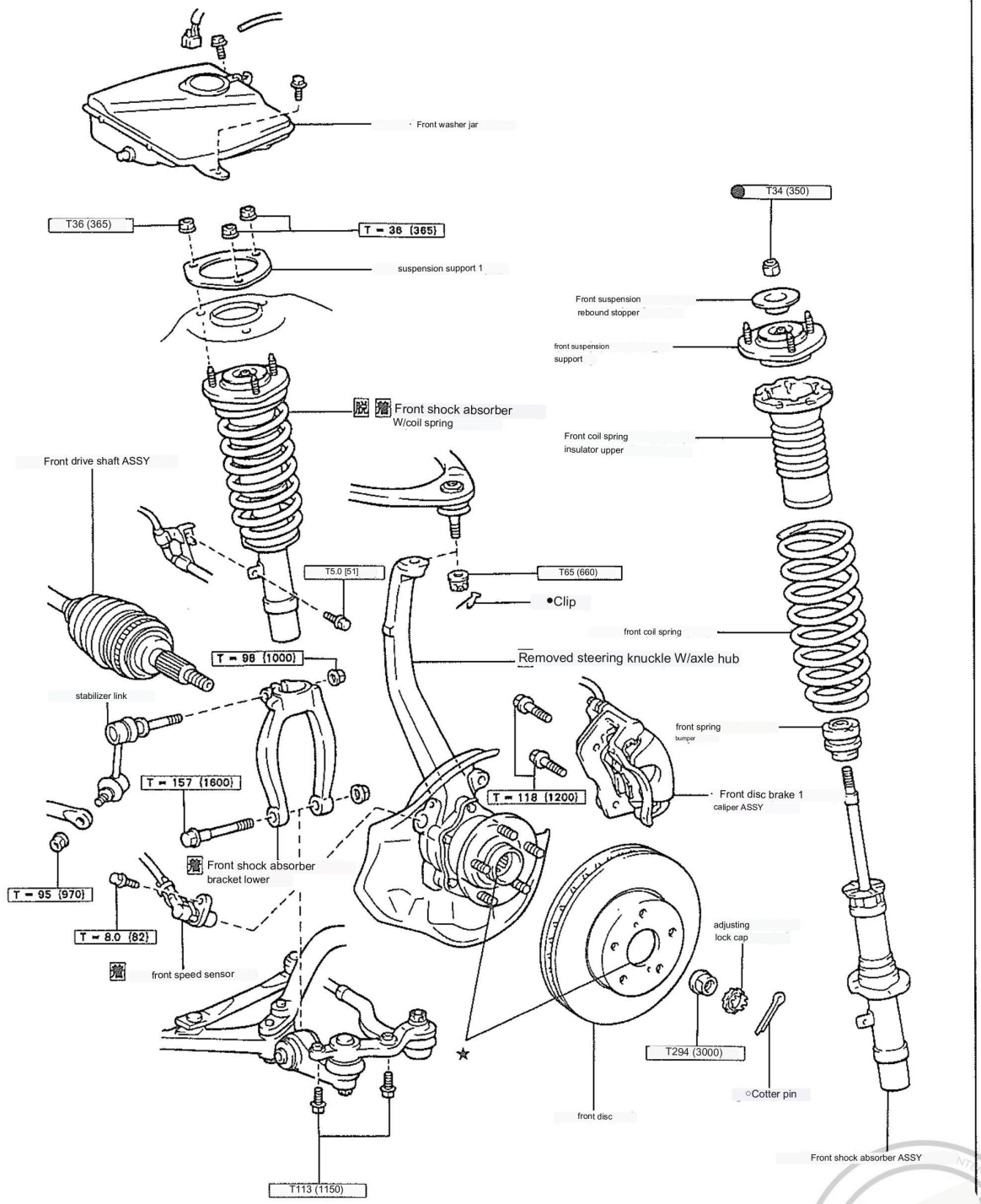
4WD car



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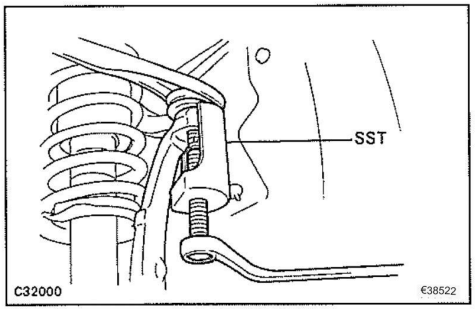

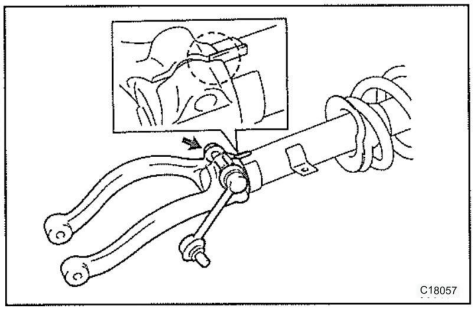

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front shock absorber

W/Points to note when installing and removing coil springs

1 Steering knuckle separation

(1) Steering the upper ball joint using SST

Separate it from the knuckle.

S S T 09610-20012

Caution Do not pull on the flexible hose.

2 Loosen the suspension support lock nut. Do not

○Caution · Before disassembling the shock absorber W/coil spring,

loosen it on the outside.

• Do not remove the lock nut

· Shock absorber W/ After disassembling the coil spring

If so, be sure to read the book.

3 Front shock absorber bracket lower installation (4WD vehicle)

{1} Align the cut end of the front shock absorber bracket lower with the convex part of the shock absorber and install.

(2) Attach the stabilizer link to the front shock absorber bracket lower and temporarily tighten the nuts. An identification mark is applied to the LH side of the stabilizer link.

ing.

4 Installing the front speed sensor

(1) Remove the ring from the front speed sensor.

(2WD vehicle) (2) Install a new O-ring to the front speed sensor.

(2WD vehicle)

Note - Foreign matter may be attached to the tip of the speed sensor or the mounting part. Make sure there are no.

- Do not twist the speed sensor cable when installing it. Five

Fully tighten the front shock absorber

(1) Keep the vehicle calm.

(2) Jack up the lower arm using a piece of wood and lower the suspension.

Apply a load to the ring.

(3) Tighten the nut on the shock absorber (lower side).

(2WD car)

(4) Tighten the shock absorber bracket lower bolt.

(4WD vehicle)

(5) Tighten the stabilizer link mounting nut. (4WD vehicle)

6 Speed sensor function check

(Refer to "Brake" - "ABS" - "Functional inspection" and "Test mode inspection")

7 Front wheel alignment inspection and adjustment

(See "Wheel Alignment" - "Front Wheel Alignment Inspection and Adjustment")

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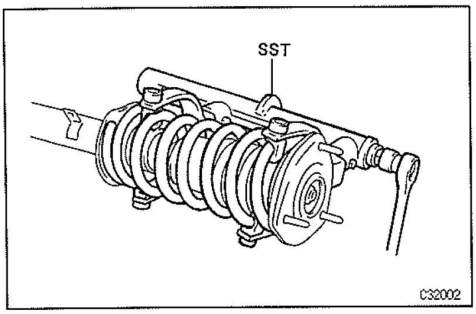


front shock absorber

W/Coil spring disassembly

1 Shock absorber ASSY removal

(1) Attach the SST to the spring so that the distance between the upper and lower hooks is widest within the attachment range.

S S T 09727-30021

(2) Compress the spring until it can move freely.

Caution: Do not use an impact wrench.

<Reference> Even if you use the hydraulic spring compressor (HSC-16DCT) and SST (09727-00021), the coil spring will not come off.

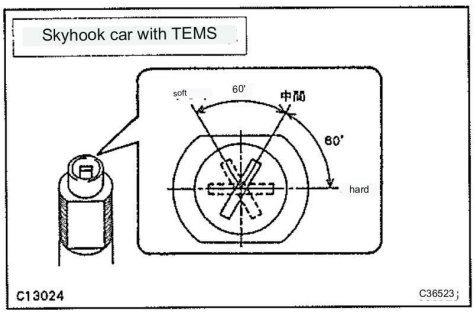
It is possible to wear it.

(3) Remove the suspension support lock nut. (4)

Rebound stopper (4WD vehicles), suspension support,

Remove the coil spring insulator upper, coil spring and spring bumper from the shock absorber.

Remove.



Shock absorber ASSY inspection

1 Shock absorber inspection

(1) Inspect the shock absorber by expanding and contracting it.

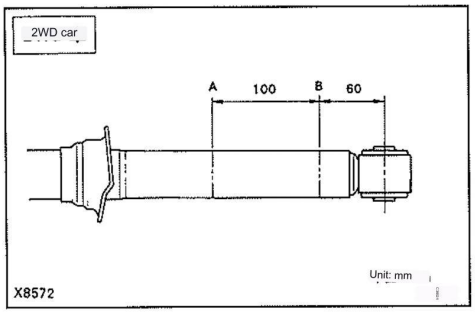
During standard contraction, the weight of the entire stroke is constant and there is no abnormal response.

When stretched, it returns at a constant speed.

· No abnormal noise when expanding or contracting

(2) Check that there is a difference in damping force when the rod is in the position shown in the figure.

(Vehicle equipped with Skyhook TEMS)



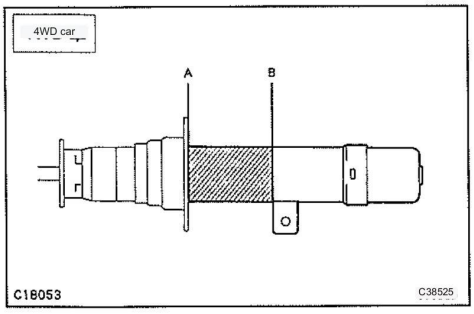
How to dispose of gas-filled shock absorbers

1 Disposal method by drilling

(1) Place the piston rod horizontally in an extended state, and place it between

Use a hacksaw or similar tool to make a hole and release the gas.

注意 AB in the diagram. - The gas that escapes is colorless, odorless, and harmless. - The force of the gas may cause chips to fly out, so cover the hacksaw with something like a rag before drilling the hole.



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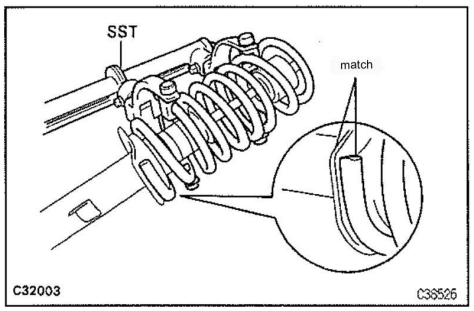


front shock absorber

W/Coil spring assembly

1 Spring bumper assembly

2 Coil spring assembly

(1) Compress the coil spring using SST.

S S T 09727-30021

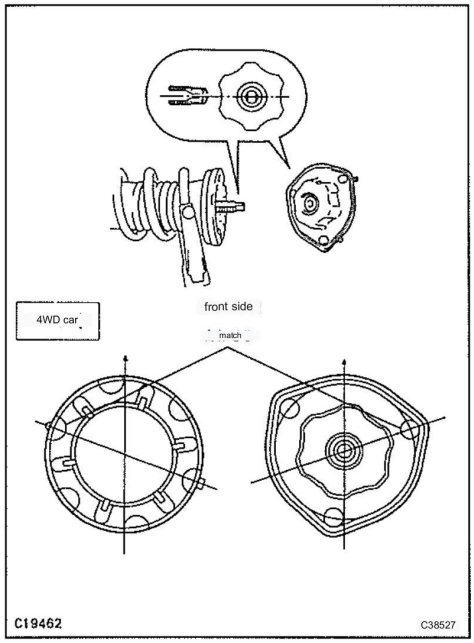
Do not use an impact wrench.

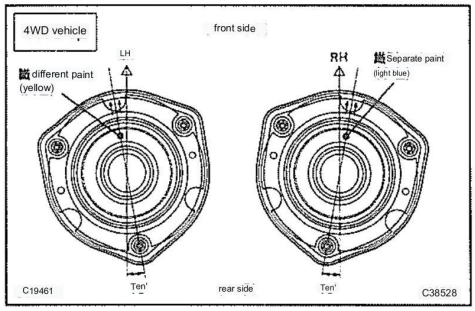
(2) Assemble the coil spring end to match the height difference in the shock absorber spring □work seat. (3) Coil spring insulator upper Assemble it to the

(4) Shock absorber piston rod tip and suspension Align the mounting holes of the support.

(5) Suspension support bolt and coil spring insert Align the notches on the lattice upper and attach the suspension support. Assemble the port.

Note) - The letter L on the top of the insulator (the letter R on the RH side) and the Align and assemble the bolts on the outside of the port. (4WD vehicle)





- Suspension supports are directional, so never install them on the left or right side. (4WD vehicle)

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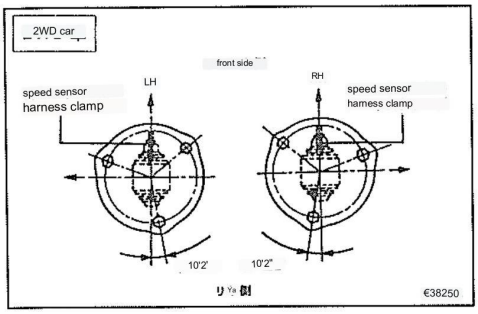

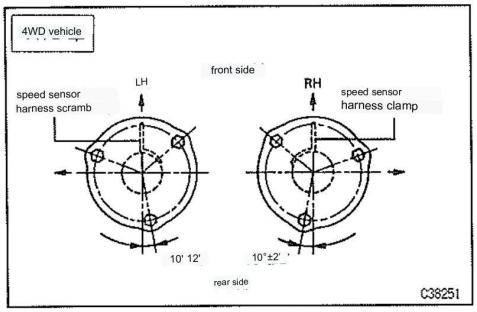

(6) Align the bolt position of the suspension support with respect to the absorber lower bushing (2WD vehicle) or speed sensor harness clamp (4WD vehicle) as shown in the diagram. Assemble the parts.

(7) Assemble the rebound stopper. (4WD vehicle)

(8) Tighten the new suspension support lock nut.

(9) Remove the coil spring compression SST.

Caution:

- Do not use an impact wrench.
- Remove the SST while checking the direction of the suspension support. Remove.

9

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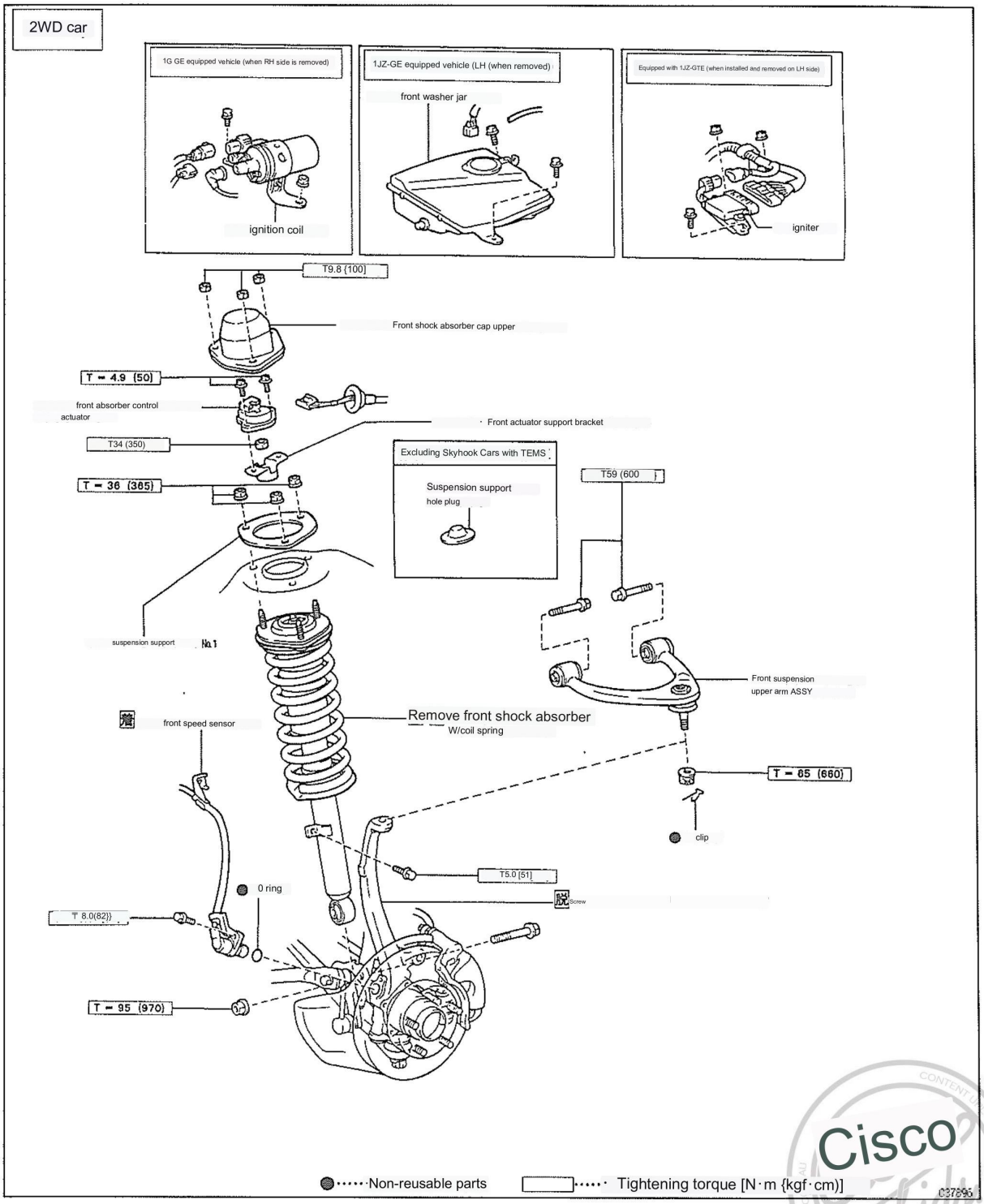
TCC46407

upper suspension arm

Detachment configuration diagram



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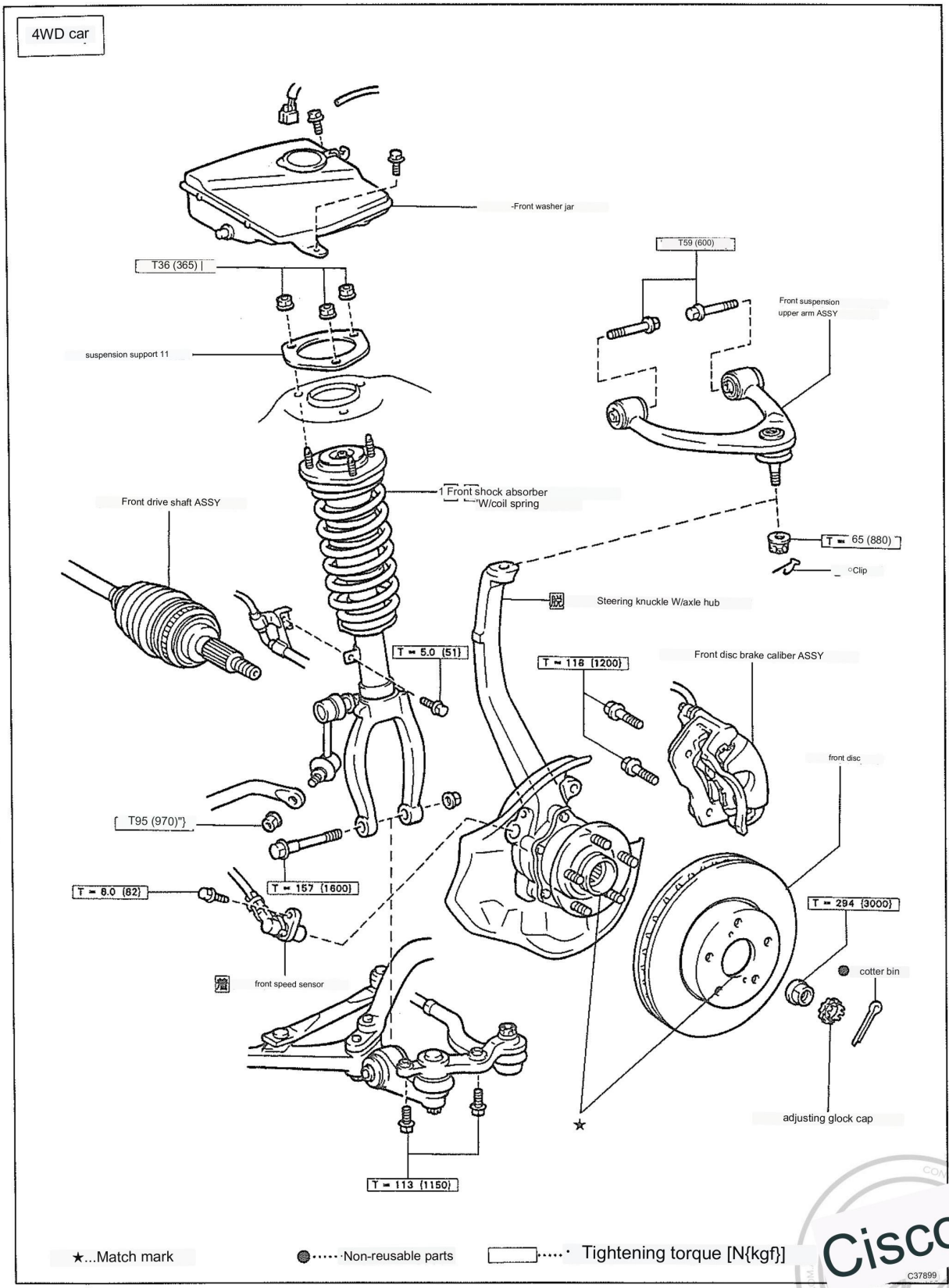

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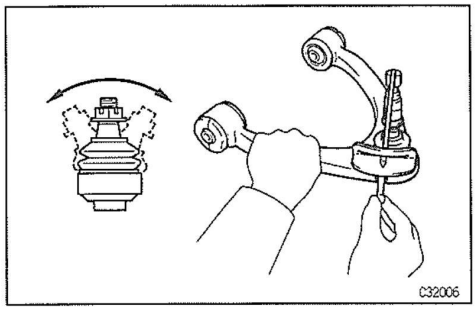

Points to note when installing and removing the upper suspension arm

1 Front shock absorber W/ Coil spring removal/ removal (see "Front shock absorber")

注意 · Do not loosen the suspension support lock nut.·
Do not remove the stabilizer link from the shock absorber. (4WD vehicle)

Upper suspension arm ball joint inspection

1 Ball joint rotation check

(1) After reciprocating the stud 5 times in the sliding direction, rotate it continuously at a speed of 2 to 4 seconds/rotation, and measure the rotational torque at the fifth time. Standard value 0.98~3.43N·m {10~35kgf·cm} (during rotation)

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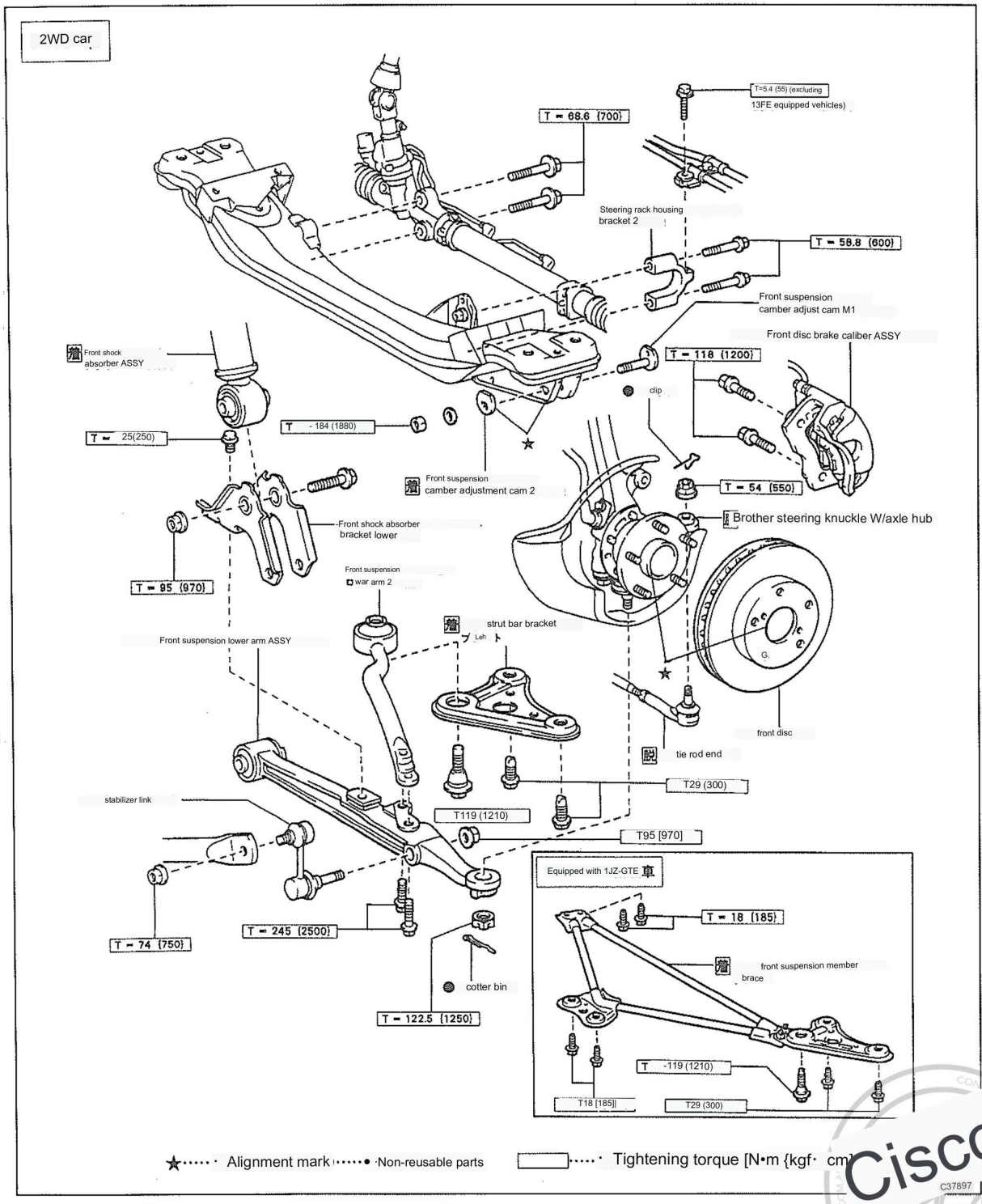
lower suspension arm

Detachment configuration diagram



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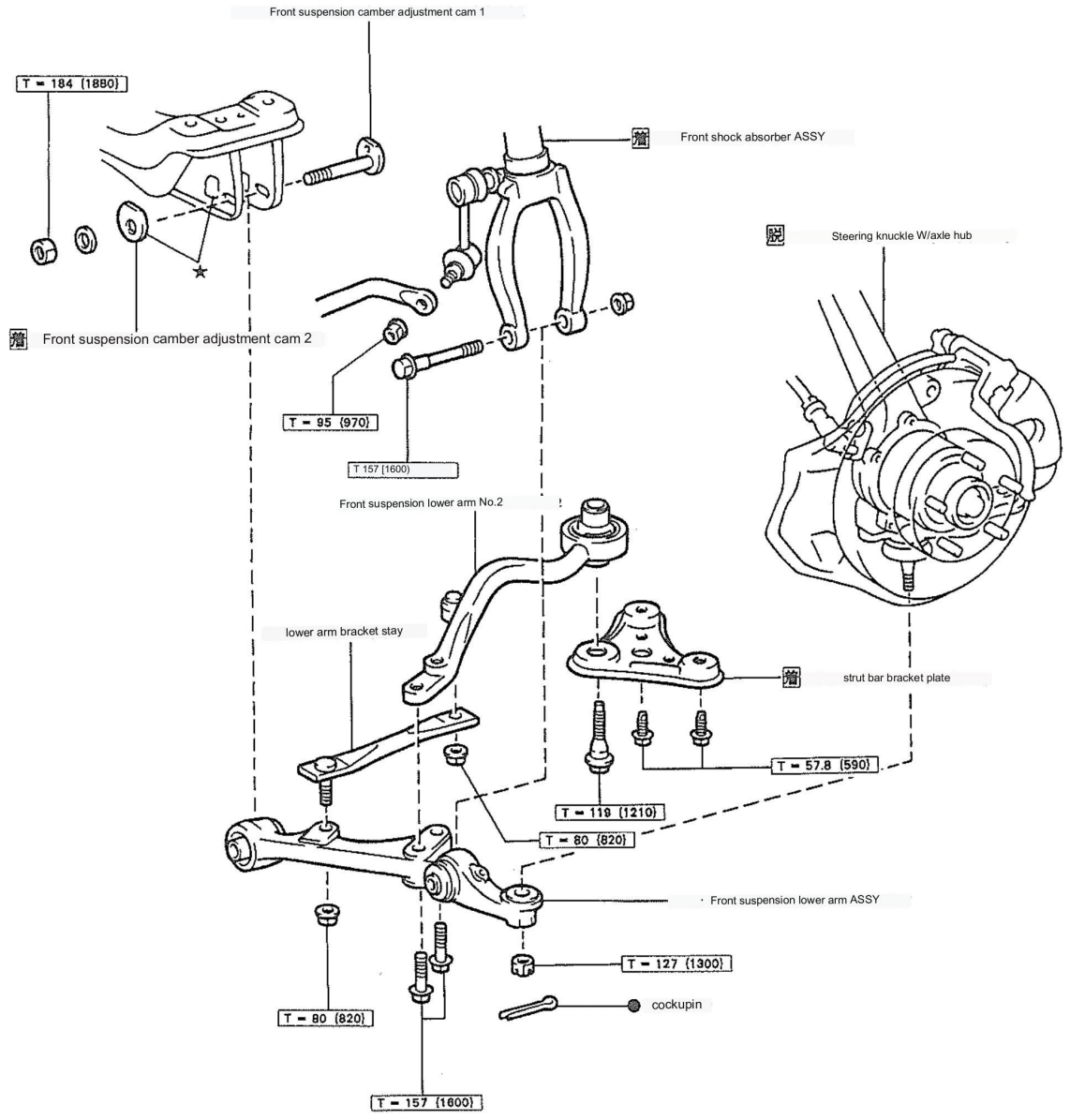
4WD vehicle



★····· : Match mark ●····· : Non-reusable parts ——— : Tightening torque [N m_{kgf· cm}]

037900

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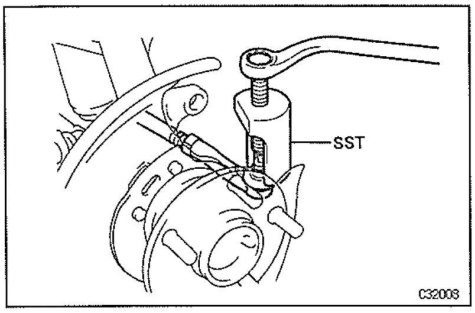


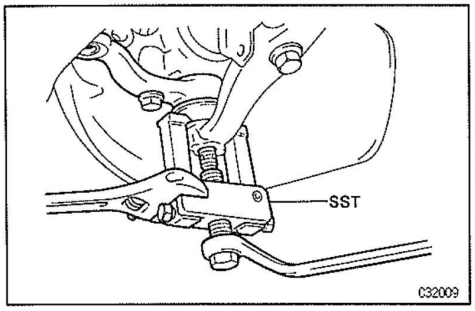
Points to note when installing and removing lower suspension arm

1 Disconnect the tie rod end (2WD vehicle)

(1) Use SST to disconnect the tie rod end from the steering knuckle.

Separate from.

SST 09610-20012



2 Steering knuckle separation

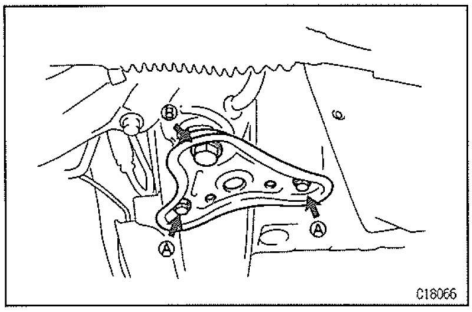
(1) Using SST, remove the lower ball joint from the lower arm.

Separate.

S S T 09628-62011

□When removing the suspension arm, the upper

Make sure that no load is applied to the ball joint.



3 Installing the strut bar bracket plate

(Excluding vehicles equipped with 1JZ-GTE)

(1) Insert lower arm No. 2 into the convex part of the body and attach the strut bar.

Temporarily attach the bracket plate with three bolts.

(2) Fully tighten the bolts®.

(3) Fully tighten the bolts.

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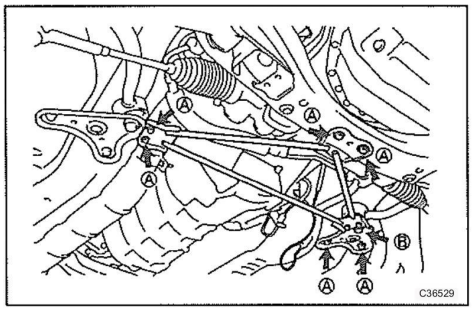


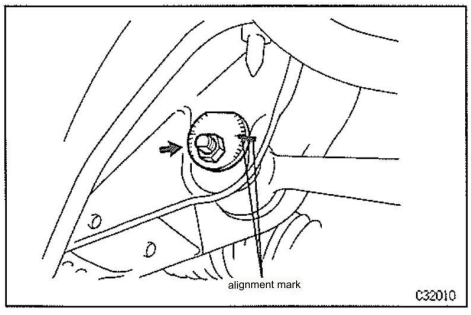
4 Front suspension member brace installation (vehicles equipped with 1JZ-GTE)

(1) Insert lower arm No. 2 into the convex part of the body and bolt the brace.

Temporarily attach with 7 pieces.

(2) Fully tighten the bolts.

(3) Fully tighten the bolts.



5 Front shock absorber (lower side) and front support

Suspension lower arm final tightening

(1) Calm the vehicle. (2) Jack up the lower arm using a piece of wood and lower the suspension.

Apply a load to the ring.

(3) Tighten the nut on the shock absorber (lower side). (2WD vehicle)

(4) Tighten the shock absorber bracket lower mounting bolt. (4WD vehicle)

(5) Tighten the lower suspension arm mounting nut. Check that the alignment marks on the camber adjustment

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6 Front wheel alignment inspection and adjustment

(see ``Wheel alignment'' - ``Front wheel alignment inspection and adjustment'')

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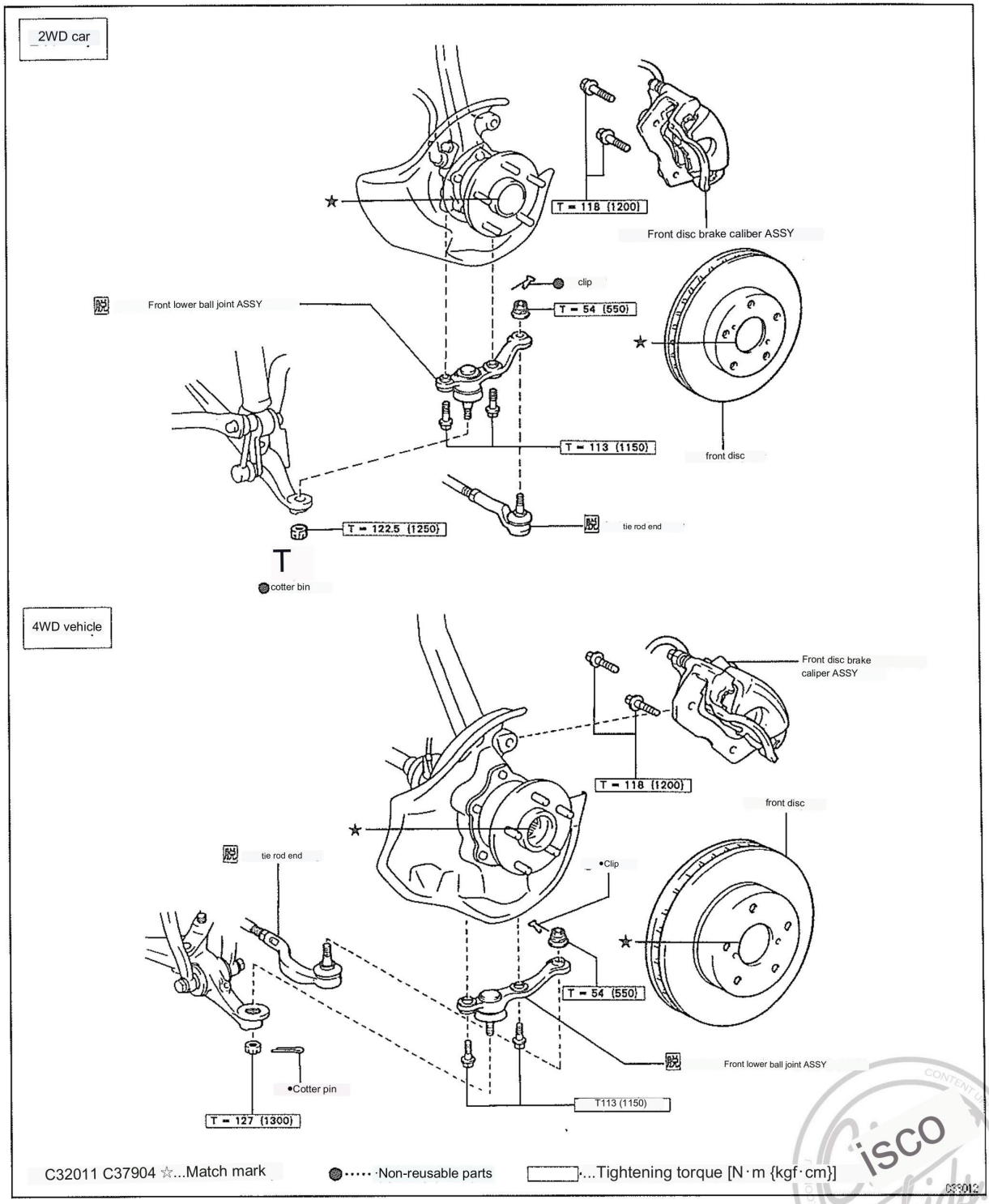
T0046400

□Warball joint

Detachment configuration diagram



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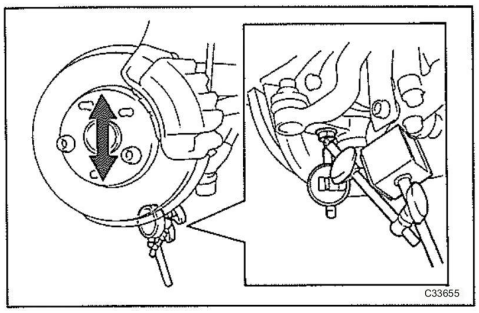


Pre-inspection (on-vehicle inspection)

1 □Checking the play of the warball joint (1) Remove the front wheel.

•Caution: Attach the hub nut to the front disc.

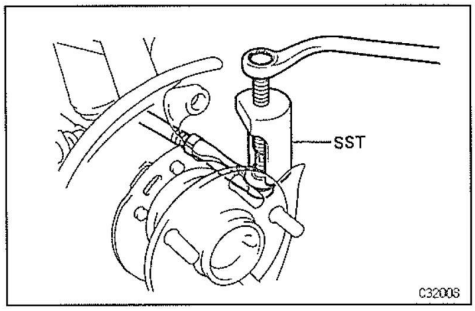
(2) Place the tip of the dial gauge on the lower ball joint mounting bolt (tie rod end side).

(3) Hold the hub nut and move it up and down (approximately 294N {30kgf}) and read the amount of play on the dial gauge.

Limit 0.9mm or less

If the limit is exceeded, replace the lower ball joint ASSY.

Ru.



□Points to note when installing and removing the warball joint

1 Tie rod end disconnection

(1) Using SST, separate the tie rod end from the steering knuckle.

SST 09610-20012

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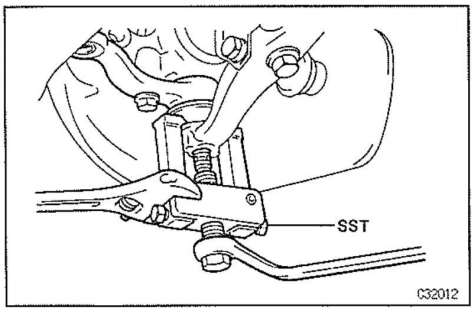

2 □Remove the lower ball joint

(1) Using SST, remove the lower ball joint from the lower arm.

Separate.

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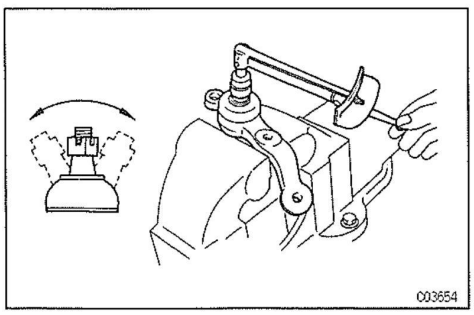
3 Front wheel alignment inspection and adjustment

(Refer to "Wheel Alignment" - "Front Wheel Alignment Inspection and Adjustment")



□Warball joint inspection

1 Inspection of ball joint rotation (1) After rotating the stud 5 times in the direction of rotation, rotate it continuously at a speed of 2 to 4 seconds/rotation, and measure the rotational torque at the

Standard value 0.1~1.96N·m {1~20kgf·cm) (during rotation)

(2) Check that there is no abnormal catch or looseness while the stud is rotating.

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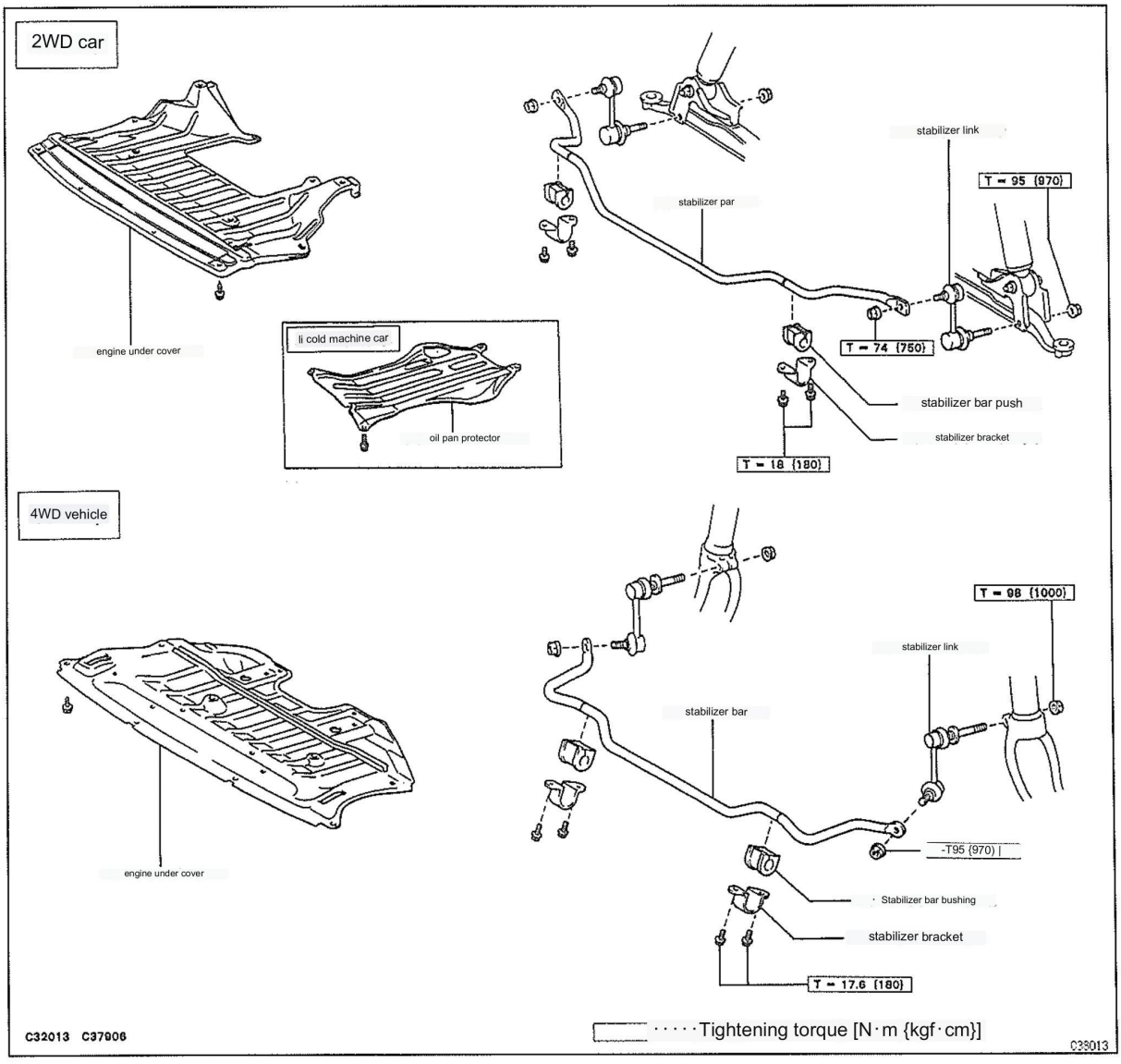
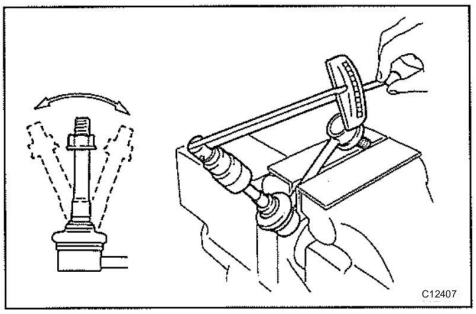
T0045410

Stabilizer bars & links

Detachment configuration diagram





Stabilizer link inspection

1 Check ball joint rotation condition

(1) After reciprocating the stud 5 times in the sliding direction, rotate it continuously at a speed of 2 to 4 seconds/rotation, and measure the rotational torque at the fifth time. CONTENT

Reference value 0.05~1.96N·m {0.5~20kgf·cm) (during rotation)

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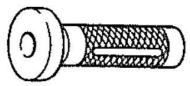
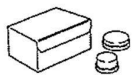
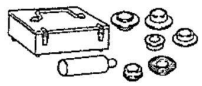
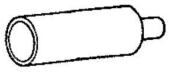
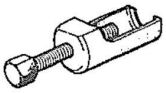
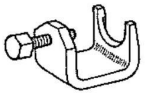
T0046411

front axle

supplies

SST

			2WD	4WD
	09308-00010	oil seal puller	For oil seal removal	○	
	09310-35010	countershaft bearing replacer	For axle hub installation		○
	09315-00022	Clutch release bearing remover & rib racer	For axle hub installation		○
	09316-60011	Transmission & Transfer Pairing Ribracer		○	○
	(09316-00011)	Replacer pipe	For front axle hub installation For dust deflector installation	○	○
	(09316-00041)	Ribracer C	For dust deflector installation		○
	(09316-00071)	Replacer F	For front axle hub installation	○	
	09527-17011	Rear axle shaft bearing remover	For bearing removal		○
	09608-32010	Steering knuckle oil seal replacer	• For oil seal installation • For front axle hub installation • For bearing installation	○	○
	09610-20012	Bitman Arm Blur	For separating ball joints	○	○
	09628-10011	Ball joint puller	For hub bolt removal	○	○

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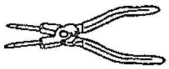
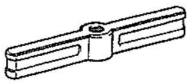
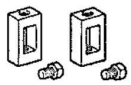
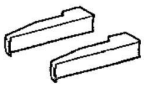
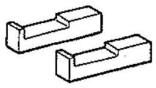
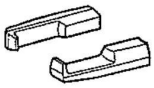
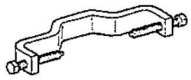
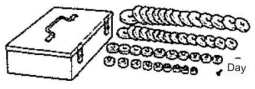
	09905-00013	Snap ring pliers		○ ○
	(09904-00090)	Crow set	Snap ring removal and removal	○ ○
	09950-40010	Blur B set		○ ○
	(09951-04020)	Hanger 200	· For removing the axle hub · For removing the pairing inner race (outer side)	○ ○
	(09952-04010)	Slide arm	· For axle hub removal · For bearing inner race (outer side) removal	○ ○
	(09953-04020)	Center bolt 150	· For axle hub removal • Bearing inner race (outer side) For removal	○ ○
	(09954-04010)	Arm 25	• For removing the axle hub · For removing the bearing inner race (outer side)	○ ○
	(09955-04010)	Crow No.1	For axle hub removal	
	(09955-04050)	Crow No.5	For axle hub removal	○
	(09955-04060)	Crow No.6	Bearing inner race (outer side) for removal	○ ○
	(09957-04010)	Attachment	• For axle hub removal • Bearing inner race (outer side) For removal	○ ○
	(09958-04010)	Holder	• For axle hub removal • Bearing inner race (outer side) For removal	○
	09950-60010	Ribracer set		○ ○

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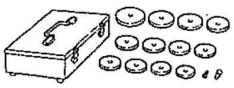
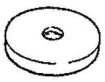
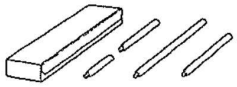
(09951-00430) Replacer 43	· For axle hub removal • Bearing inner race (outer side) For removal		○
Replacer 56 09951-00560 70126	For bearing removal	○	
 09950-60020 Replacer set No.2		○	○
 (09951-00710) Replacer 71	For bearing removal		○
Replacer 72 09951-00720 70138	For bearing installation	○	
 09950-70010 Handle set		○	○
(09951-07150) Handle 150	Pairing and removing	○	

tool

Chisel 11101	For uncaulking and clinching nuts	○	
Socket wrench (30mm) 10102	Removing and removing axle hub lock nut		○
Socket wrench (32mm) 10103	Axle hub nut removal and removal	○	
plastic hammer 12101	For drive shaft separation		○

計器

Dial gauge 21201	· For checking bearing looseness • For checking axle hub runout		○○

Oils and fats/others

Nut (M12×P1.5mm) 54603	· For fixing steering knuckles · For fixing hub bolts	○○
Toyota genuine MP grease No.2 30204	For application to oil seal lip	○○

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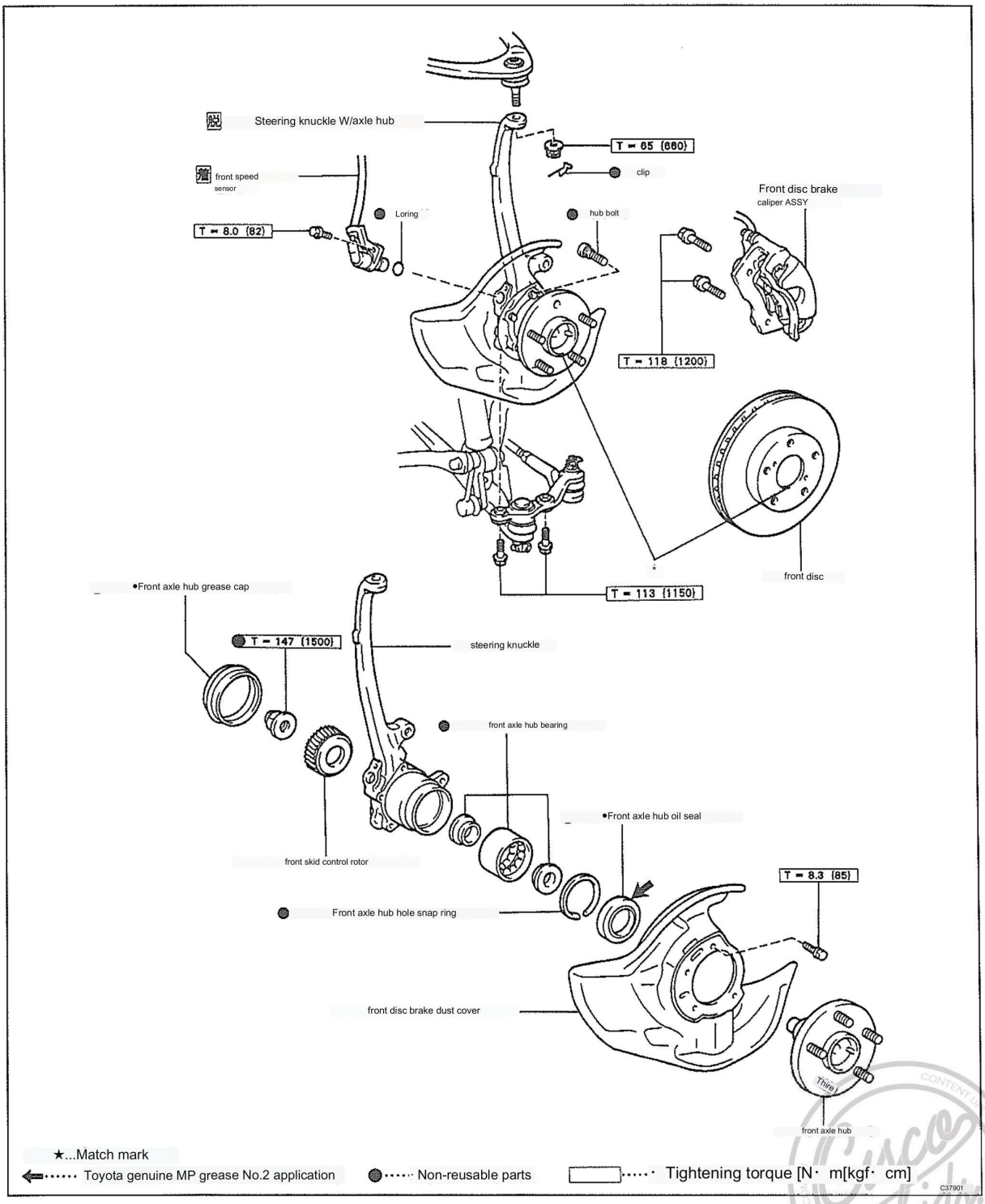
T0048412

Axle Hub (2WD Vehicle)

Detachable exploded configuration diagram



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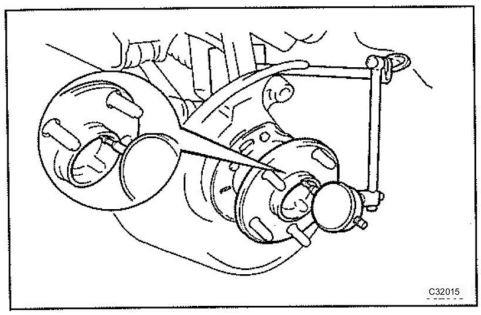


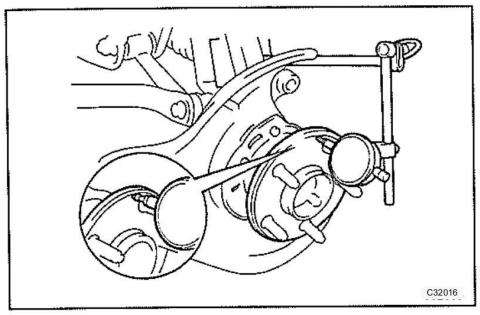
Axle hub bearing inspection before disassembly

1 Inspection of play in the bearing axial direction

(1) Near the inner circumference of the axle hub (flange), axial limit of

Check the play.

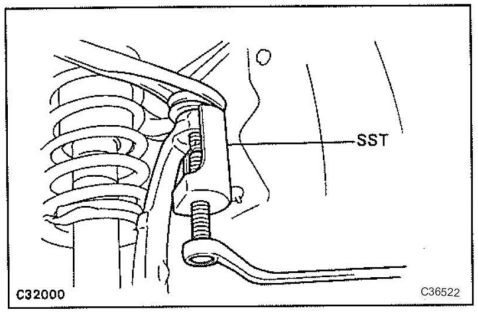
bearing 20.05mm



2 Axle hub runout check

(1) Inspect the axle hub for runout near the outer circumference of the axle hub.

limit 0.05mm



steering knuckle

W/ Points to note when installing and removing the axle hub

9

1 Steering knuckle separation

(1) Steering the upper ball joint using SST

Separate it from the knuckle.,

S S T 09610-20012

Note Do not damage the ball joint dust cover.

2 Installing the front speed sensor

(1) Remove the O-ring from the front speed sensor.

(2) Attach a new O-ring to the front speed sensor.

[Note] - Foreign matter is attached to the tip of the speed sensor or the mounting part.

Make sure there are no.

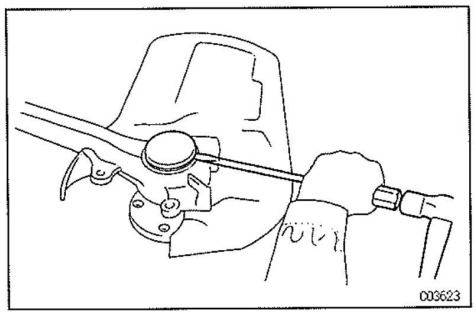
- Do not twist the speed sensor cable when installing it.

3 Speed sensor function check

(Refer to "Brake" - "ABS" - "Functional inspection" - "Test mode inspection")

4 Front wheel alignment inspection and adjustment

(Refer to "Wheel Alignment" - "Front Wheel Alignment Inspection and Adjustment")



Steering knuckle W/axle hub disassembly

1 Removing the front axle hub grease cap (1)

Using a screwdriver and hammer, remove the hub grease cap.

from the steering knuckle.

2 Remove the nut

(1) Unscrew the nut using a chisel and hammer.

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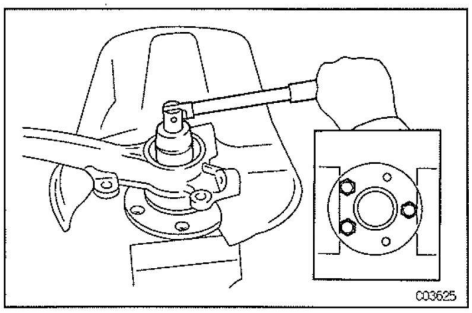


(2) Screw the three nuts onto the hub bolt at the position shown in the illustration until the flange Secure it to the chair.

注意 Do not tighten the vise too tightly.

< > It is recommended to use nuts with a nominal diameter of 12 mm and a pitch of 1.5 mm.

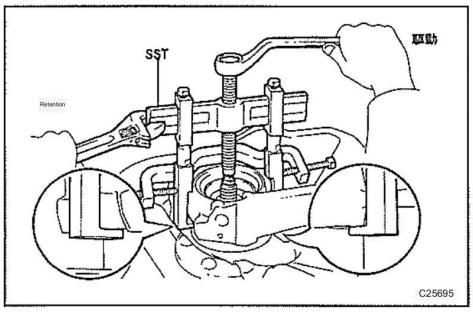
(3) Remove the nut using a socket wrench (32mm).

3 Removing the front skid control rotor

注意 Do not allow foreign matter to adhere

to the rotor. 4 Front disc brake dust cover installation bolt removal

Removed



5 Front axle hub removal

(1) Using SST, remove the axle hub from the steering knuckle.

Remove.

SST	09951-04020	09952-04010	09953-04020
	09954-04010	09955-04050	09957-04010
	09958-04010		

注意 • Do not let the steering knuckle fall.

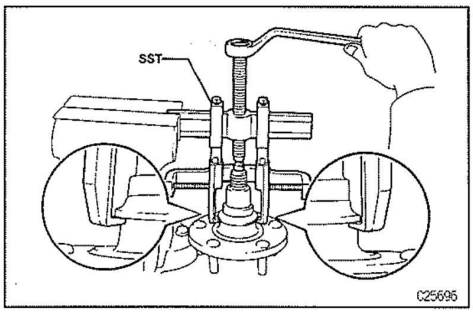
・ Threaded part and tip of SST center bolt (09953-04020)

Use by applying oil to the ends.

(2) Remove the front disc brake dust cover. (3)

Use SST to attach the bearing inner race (outer side).

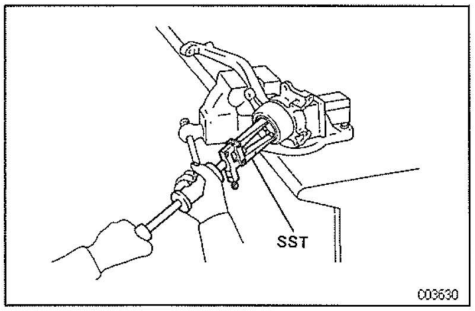
Remove it from the hub.



SST	09951-04020	09952-04010	09953-04020
	09954-04010	09955-04060	09957-04010
	09958-04010		

Caution - Do not drop the axle hub.

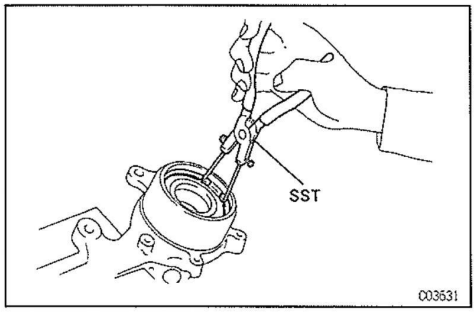
・ Apply oil to the threaded part and tip of the SST center bolt (09953-04020) before use.



6 Front axle hub oil seal removal

(1) Using SST, remove the oil seal. SST

09308-00010



7 Removing the front axle hub hole snap ring

(1) Using SST, remove the hole snap ring. SST

09904-00090 09905-00013

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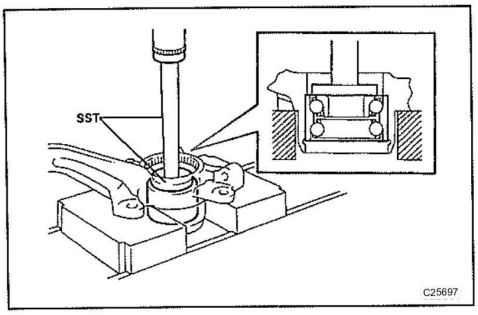


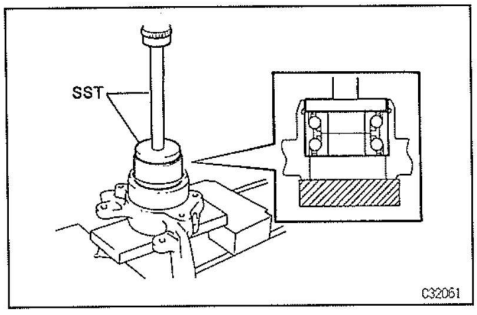
8 Front axle hub bearing removal

(1) Using SST and a press, insert the bearing into the steering nut. Remove it from the cage.

S ST 09951-00560 09951-07150

•Caution: The steering knuckle will fall off at the same time as the bearing comes off, so support it with your hands when doing this.

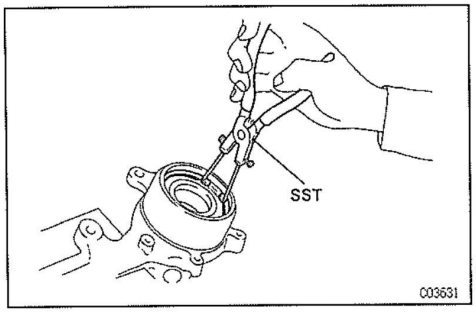
Steering knuckle W/axle hub assembly



1 Front axle hub bearing assembly

(1) Using SST and a press, press the new bearing into the steering knuckle. SST

09951-00720 09951-07150

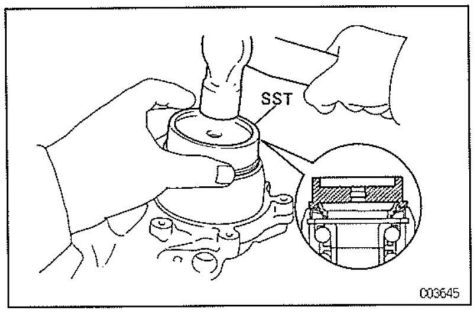


2 Assembling the front axle hub hole snap ring

(1) Using SST, install the new hole snap ring. S ST

09904-00090 09905-00013

9



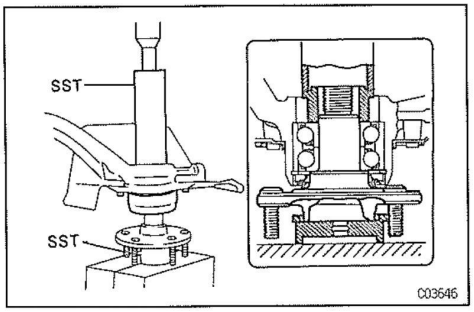
3 Assembling the front axle hub oil seal

(1) Using SST and a hammer, assemble the new oil seal. Kick.

S S T 09608-32010

(2) Apply a thin layer of MP Grease No. 2 to the lip of the oil seal.

4 Assembling the front disc brake dust cover



5 Front axle hub assembly

(1) Using SST and a press, press the axle hub into the steering knuckle.

SST 09316-00011 09316-00071 09608-32010

6 Front skid control rotor assembly Make sure that no foreign matter is attached to the rotor.

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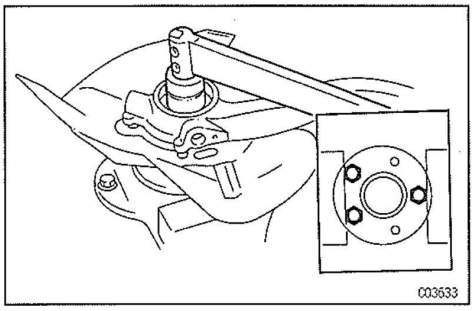


7 Nut assembly

(1) Screw the three nuts onto the hub bolt at the position shown in the diagram until it reaches the flange.

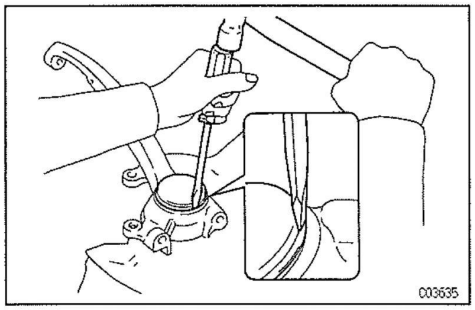
Fix it in a vise.

注意 Do not tighten the vise too tightly.

<Reference> It is recommended to use nuts with a nominal diameter of 12 mm and a pitch of 1.5 mm.

(2) Tighten the new nut using a socket wrench (32mm).

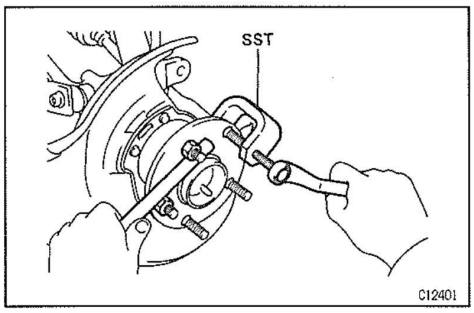
(3) Use a chisel and hammer to crimp the nut.



8 Installing the front axle hub grease

cap (1) Using a screwdriver and hammer, install the new hub grease cap.

9

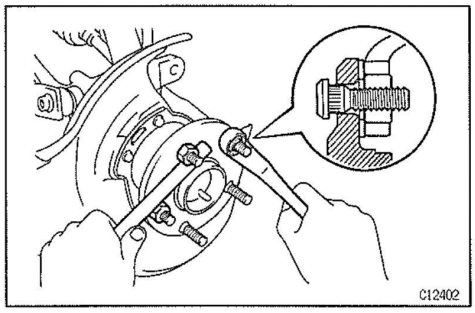


hub bolt replacement

1 Remove hub bolt

(1) Using SST, remove the hub bolt. SST

09628-10011



2 Hub bolt installation

(1) Attach a new hub bolt to the axle hub, and install the hub bolt while tightening the nut using the plate washer.

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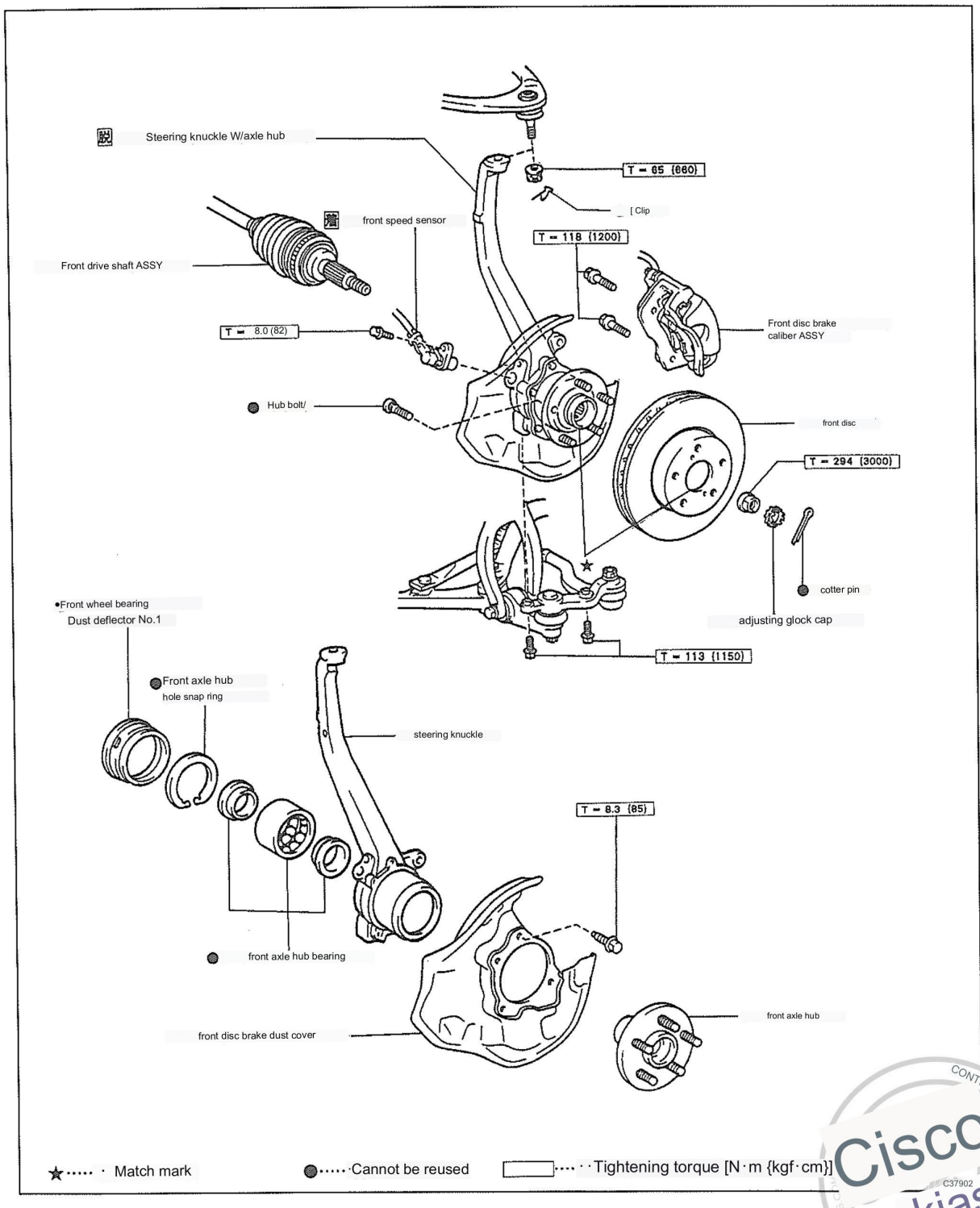
T0040419

Front axle hub (4WD vehicle)

Disassembled configuration diagram



9

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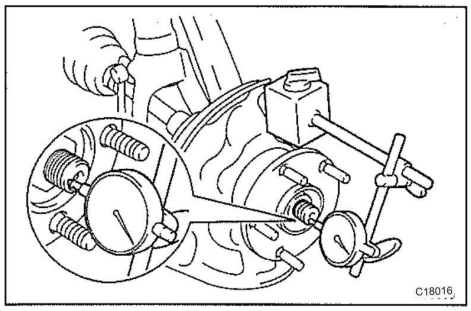


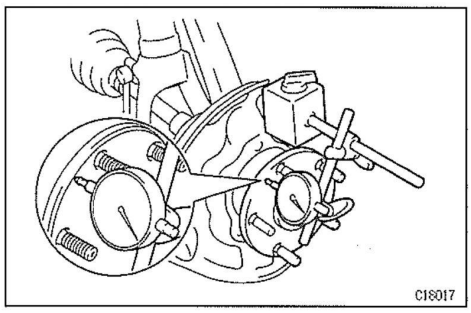
T0040420

Front axle hub inspection before disassembly

1 Check for play in the bearing axial direction

(1) Check for looseness in the axial direction of the bearing at the end of the drive shaft.

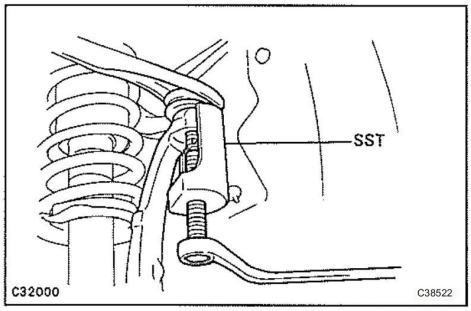
Limit 0.05mm



2 Axle hub runout check

(1) Inspect the axle hub for runout near the outer periphery of the axle hub.

Limit 0.05mm



9

steering knuckle

Points to note when installing and removing W/axle hub

1 Steering knuckle W/axle hub removal

(1) Steering from the upper ball joint using SST

Separate the knuckles.

SST 09628-62011

注意 Do not damage the ball joint dust cover.

(2) Tap the tip of the drive shaft to disengage the shaft and axle hub.

注意 · Protect the oil seal and drive shaft threads with tape to prevent them from being damaged.

• Drive shaft boot and speed sensor rotor

Protect it with a cloth to prevent it from being damaged.

<reference> If the fit is tight, use a brass bar and hammer to Tap the tip of the drive shaft.

2 Installing the front speed sensor

CAUTION · Make sure that there are no foreign objects attached to the tip of the speed sensor or the mounting part. - Do not twist the speed sensor cable when installing it.

3 Speed sensor function check

(``Brake'' - ``ABS'' - ``Functional inspection'' and ``Test mode inspection'')

4 Front wheel alignment inspection and adjustment

(Refer to "Wheel Alignment" - "Front Wheel Alignment Inspection and Adjustment")

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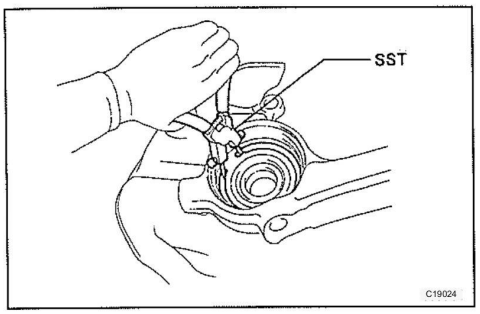
Congratulations times



Steering knuckle W/axle hub disassembly

1 Front wheel bearing dust deflector No.1

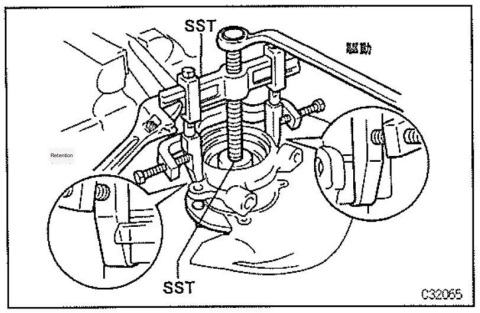
Sushi

(1) Using a screwdriver, remove dust deflector

No.1. Removing the front axle hub hole snap

ring (1) Using SST, remove the hole snap ring. 2

S S T 09904-00090 09905-00013



3 Front disc brake dust cover installation bolt removal

Removal

Front axle hub removal 4

(1) Using SST, remove the axle hub.

S S T 09951-00430 09951-04020 09952-04010

09953-04020 09954-04010 09955-04010

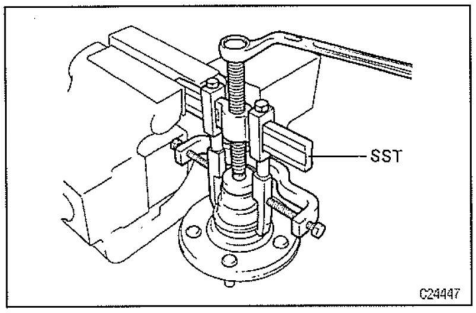
09957-04010 09958-04010

- Do not drop the axle hub.

· Threaded part and tip of SST center bolt (09953-04020)

Use by applying oil to the

ends. (2) Remove the front disc brake dust cover.



(3) Using SST, remove the bearing inner race (outer

side).

S S T 09951-00430 09951-04020 09952-04010

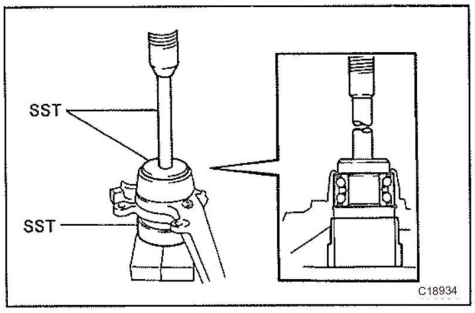
09953-04020 09954-04010 09955-04060

09957-04010 09958-04010

· Do not drop the axle hub.

· Apply oil to the thread and tip of the SST center

bolt (09953-04020) before use.



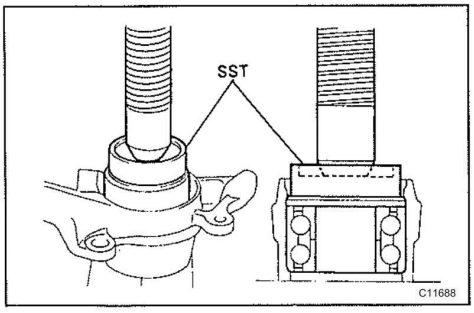
5 Front axle hub bearing removal

(1) Assemble the removed bearing inner race (outer

side) to the bearing.

(2) Remove the pairing using SST and press. SST

09527-17011 09951-00710 09951-07150



Steering knuckle W/axle hub assembly

1 Front axle hub bearing assembly

(1) Press the new bearing into the steering knuckle using

the SST and brace.

S S T 09608-32010

- Since the oil seal is built-in, the inner race cannot be removed. If the bearing comes loose, do not use that bearing.
- Do not touch the oil seal of the bearing.

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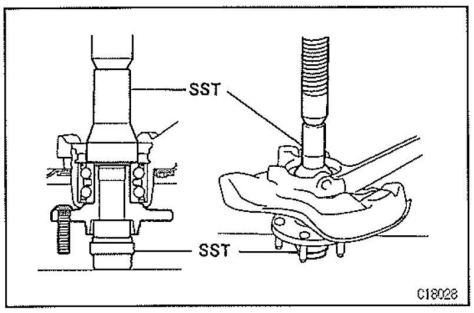


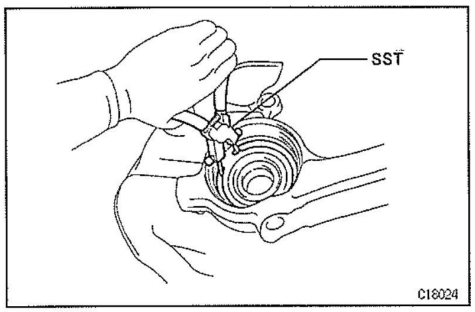
2 Front disc brake dust cover assembly

Front axle hub assembly 3

(1) Using SST and a press, press the axle hub into the steering knuckle.

S S T 09310-35010 09315-00022

note Do not touch the oil seal of the bearing.

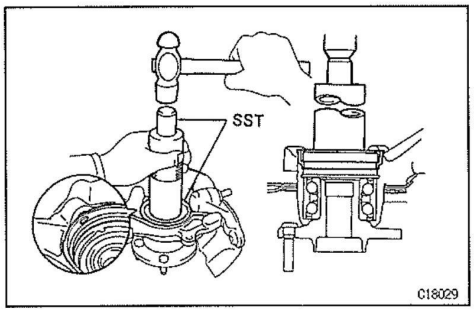


4 Front axle hub hole snap ring assembly

(1) Using SST, install a new hole snap ring. SST

09904-00090 09905-00013

Do not touch the oil seal of the bearing.



5 Front wheel bearing dust deflector No.1 assembly

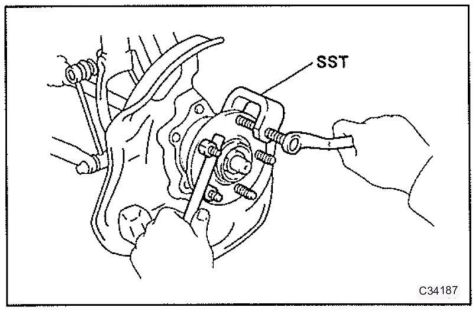
(1)

Use SST to steer the new dust deflector No.1.

Assemble to Gnuckle.

S S T 09316-00011 09361-00041

Note The hole for the speed sensor of the dust deflector No. 1 is Align with the hole in the ring knuckle.

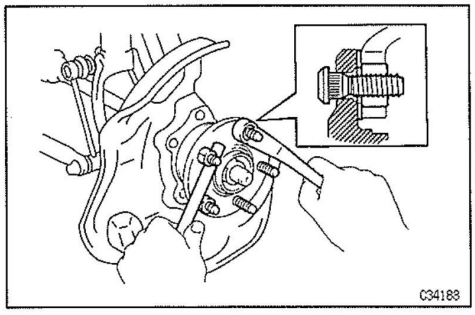


hub bolt replacement

1 Removing the hub

bolt (1) Using SST, remove the hub bolt.

SST 09628-10011



2 Hub bolt installation

(1) Attach a new hub bolt to the axle hub, and install the hub bolt while tightening the nut using the plate washer.

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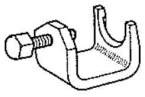
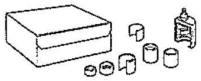
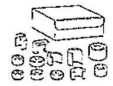
T0040540

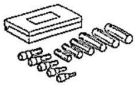
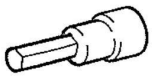
rear suspension

Preparation product

S S T

	09628-10011	Ball joint puller	Remove the rear suspension arm No. 1 for
	09710-22021	Front suspension bustur set	
	(09710-01051)	Lower Armbushriumover	Strat rodbushu removed
	09710-30021	Suspension Bushtur Set	
	(09710-03111)	Rear suspension pension upper & Rower arm bushing remover	Strat Rod Busu Pressure
	(09710-03141)	Lateral Rod Bush Limiting Base	Strut rodbusu detachable
	09727-30021	: coil spring compressor	For coil spring compression

tool

	09040-00010	hexagon wrench set	
	(09043-20060)	Socket hexagon wrench 6	Stabilizer link removal and removal
Socket hexagon wrench 8 09043-2008 0	70025		Drive shaft removal (1JZ-GE-equipped car)
Socket hexagon wrench 10 09043-20100	70026		Drive shaft removal (car equipped with 2JZ-GE)
Socket wrench (32mm)	10103		For drive shaft rock nut detachment
plastic hammer	12101		For removing drive shaft
	HSC-16DCT	Spring compressor Treatment as Banzai Co., Ltd.	: For coil spring compression

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soup bowl

Torque wrench [0~3N· m {0~30kgf· cm}] 20114	For ball joint inspection
Torque wrench [0~6N· m {0~60kgf· cm}] 20116	For ball joint inspection

others

hacksaw 50803	For shock absorber drilling
wire 52015	For suspending disc brake calipers For suspending axle carriers
piece of wood 53601	Upper control arm removal/removal For rear suspension final tightening

Congratulations times
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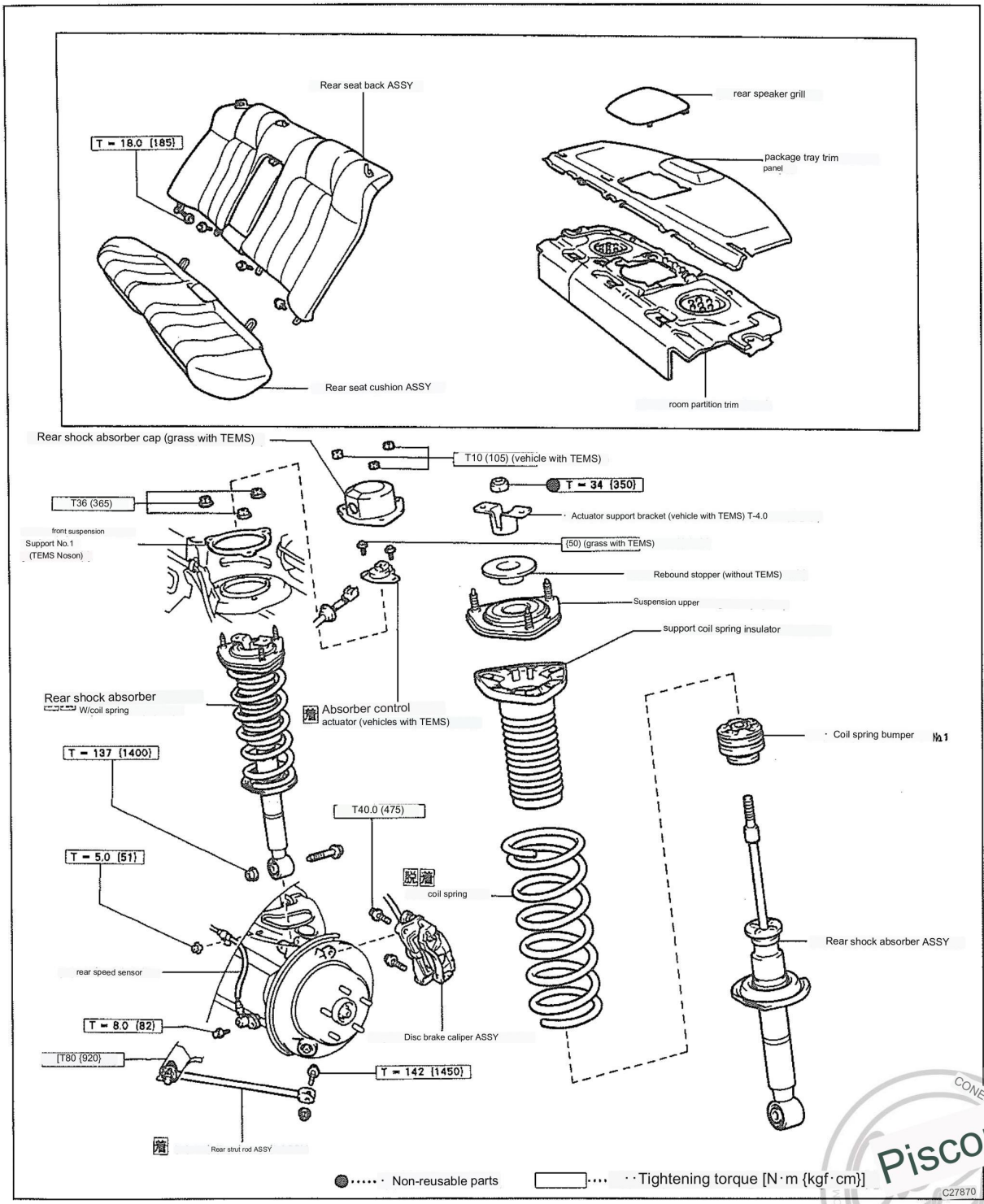
T0048541

rear shock absorber

Detachable exploded configuration diagram



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C27870

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rear shock absorber

W/Points to note when installing and removing coil springs

1 Loosen the suspension support lock nut. Do

注意 not loosen it unless you are disassembling the shock absorber W/coil spring.

- Do not remove the lock nut.
- Shock absorber W/ After disassembling the coil spring

If so, be sure to perform final tightening.

2 Absorber control actuator installation

(vehicles with TEMS)

注意 When assembling, make sure that the actuator shaft and cylinder control rod match.

3 Installing the rear speed sensor

Caution: • Make sure that there are no foreign objects attached to the tip of the speed sensor or the mounting part.

- Do not twist the speed sensor cable when installing it.

4 Rear shock absorber and rear strut rod

ASSY final tightening

(1) Calm the vehicle.

(2) Jack up the axle carrier using a piece of wood and apply a load to the rear suspension.

(3) Rear shock absorber (lower side) and rear strut

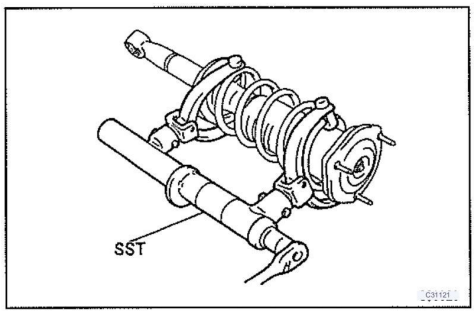
Tighten the rod ASSY nut.

5 Speed sensor function

check (see ``Brake'' - ``ABS'' - ``Function check'' - ``Test mode check'')

6 Front wheel alignment inspection and adjustment

(See "Wheel Alignment" - "Rear Wheel Alignment")



rear shock absorber

W/Coil spring disassembly

1 Shock absorber removal

(1) Attach the SST to the coil spring so that the distance between the upper and lower hooks is widest within the installation range.

S S T 09727-30021

(2) Compress the coil spring until it can move freely.

Note 要 Do not use an impact wrench.

〈参考〉 Coil springs can be installed and removed using hydraulic spring compressors HSC-16DCT and SST (09727-00021). It is Noh.

(3) Remove the suspension support lock nut.

(4) Remove the actuator support bracket (vehicles with TEMS), rebound stopper (vehicles without TEMS), rear suspension support, rear coil spring, and spring bumper No. 1.

Congratulations times
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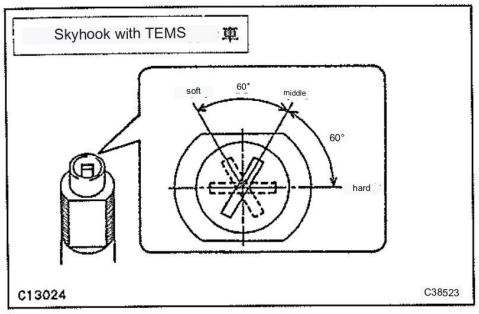


Rear shock absorber inspection

1 Operation check

(1) Extend and retract the shock absorber.

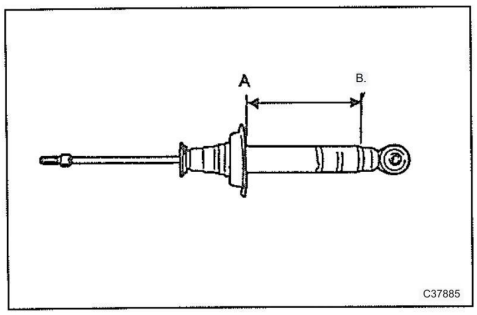
During standard contraction, the weight of the entire stroke is constant and there is no abnormal response.

When stretched, it returns at a constant speed.

- No abnormal noise when expanding or contracting

(2) Check that there is a difference in damping force when the rod is in the position shown in the figure.

(Vehicle equipped with Skyhook TEMS)



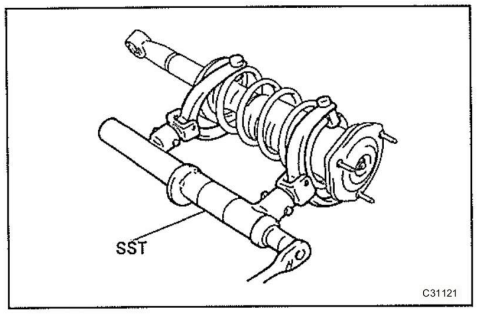
How to dispose of gas-filled shock absorbers

1 Disposal method by drilling

(1) Place the piston rod horizontally with it extended, and place it between A and B in the diagram.

Use a hacksaw or similar tool to make a hole and release the gas.

Caution - The gas that escapes is colorless, odorless, and harmless. - The force of the gas may cause chips to fly out, so cover the hacksaw with something like a rag before drilling the holes.



rear shock absorber

W/Coil spring assembly

9

1 Spring bumper No.1 assembly

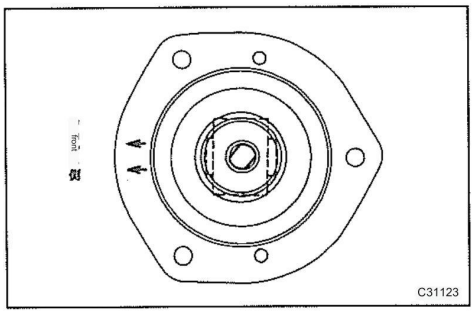
2 Rear coil spring assembly

(1) Use SST to sufficiently compress the coil spring.

S S T 09727-30021

注意 Do not use an impact wrench.

(2) Attach the coil spring to the shock absorber, aligning the coil spring end with the step on the shock absorber.



3 Suspension upper support assembly

(1) Align the suspension support and piston rod mounting holes.

Align the lower bracket of the shock absorber as shown in the illustration.

Assemble it in position.

(2) Tighten the new suspension support lock nut.

Caution: Do not use an impact wrench.

(3) Before removing the SST for coil spring compression, Correct the contact between the top and bottom of the spring.

(4) Remove the SST for coil spring compression.

注意 • Do not use an impact wrench.

· Take SST while checking the direction of the suspension support.

Remove.

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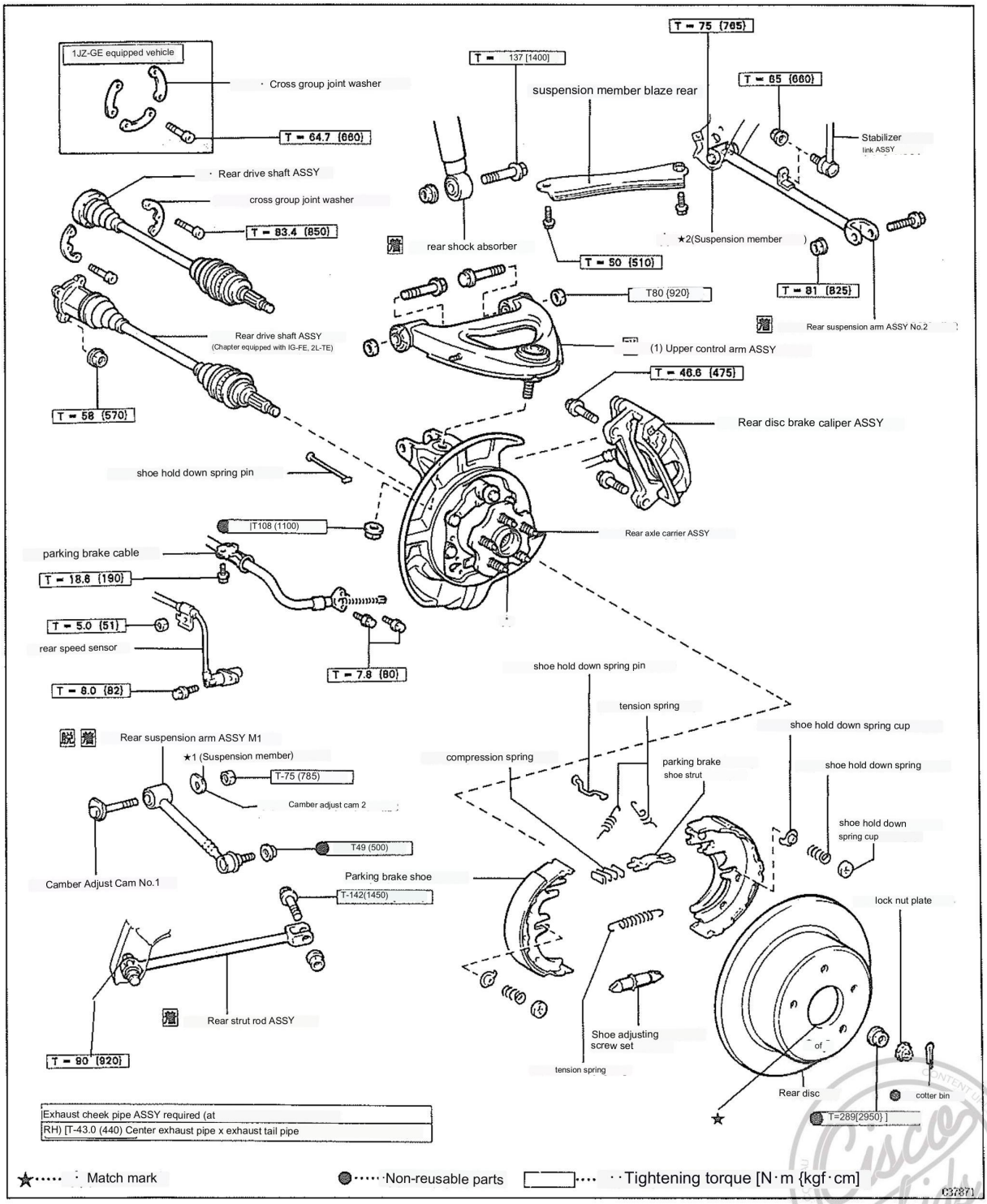
T9048542

upper control arm

Disassembled configuration diagram



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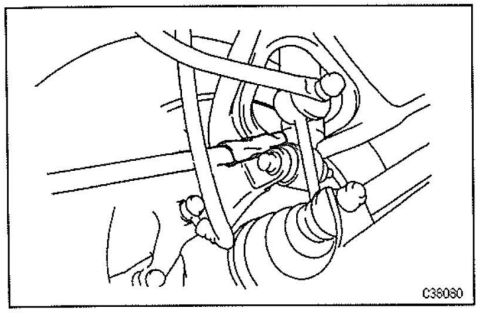


Pre-inspection

1 Inspecting the play of the ball joint

(1) Jack up the rear of the vehicle.

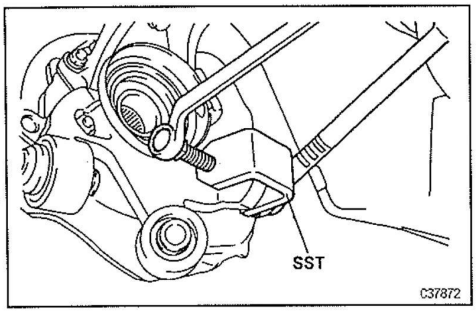
(2) Lift up the upper control arm and remove the ball joint.

Check that there is no play in the vertical direction.

Wrap it in a cloth.

Upper control arm ASSY

Points to note during attachment/detachment work



1 Rear drive shaft ASSY installation and removal

(Refer to "Drive Shaft" - "Drive Shaft Removal")

2 Removing and installing the parking

(brake shoe (Refer to "Brake" - "Removing the parking brake")

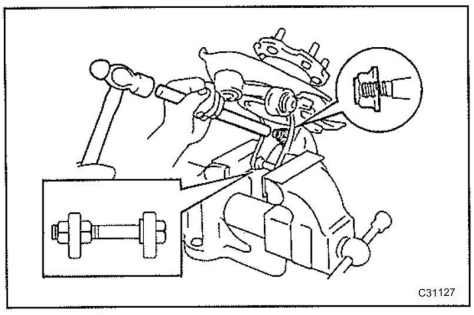
3 Removing rear suspension arm ASSY No.

1 (1) Using SST, remove rear suspension arm ASSY No. 1.

Remove.

S S T 09628-10010

Caution: Do not damage the ball joint dust



4 Upper control arm ASSY removal

(1) Fix the axle carrier to the vise using bolts and nuts.

(2) Loosen the nut on the upper control arm.

(3) Remove the upper control arm using a brass bar and hammer.

9

5 Fully tighten the rear shock absorber, strut rod and rear suspension arm.

(1) Calm the vehicle.

(2) Jack up the axle carrier using a piece of wood and apply a load to the suspension.

(3) Tighten the nut on the rear shock absorber (lower side).

(4) Tighten the strut rod mounting nut. (5)

Tighten the rear suspension arm No. 1 and No. 2 mounting nuts tighten.

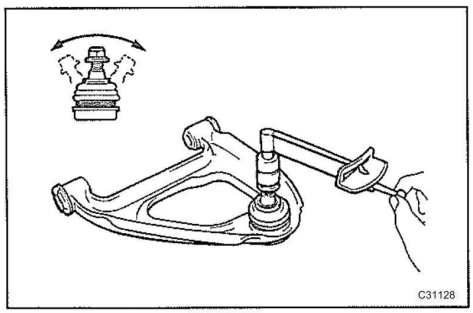
Align the alignment marks on camber adjustment cam No. 1 and rear suspension member and install.

6 Speed sensor function check

(``Brake'' - ``Anti-lock brake system'' - ``Test mode inspection'')

7 Rear wheel alignment inspection and adjustment

(Refer to "Wheel Alignment" - "Rear Wheel Alignment Inspection and Adjustment") Upper control arm ball joint inspection



1 Ball joint rotation check

(1) After reciprocating the stud 5 times in the swinging direction, the speed is 2~4 seconds/ Rotate continuously and measure the fifth time.

rotation Standard value 0.98~3.4N· m (10~35kgf· cm) (during rotation)

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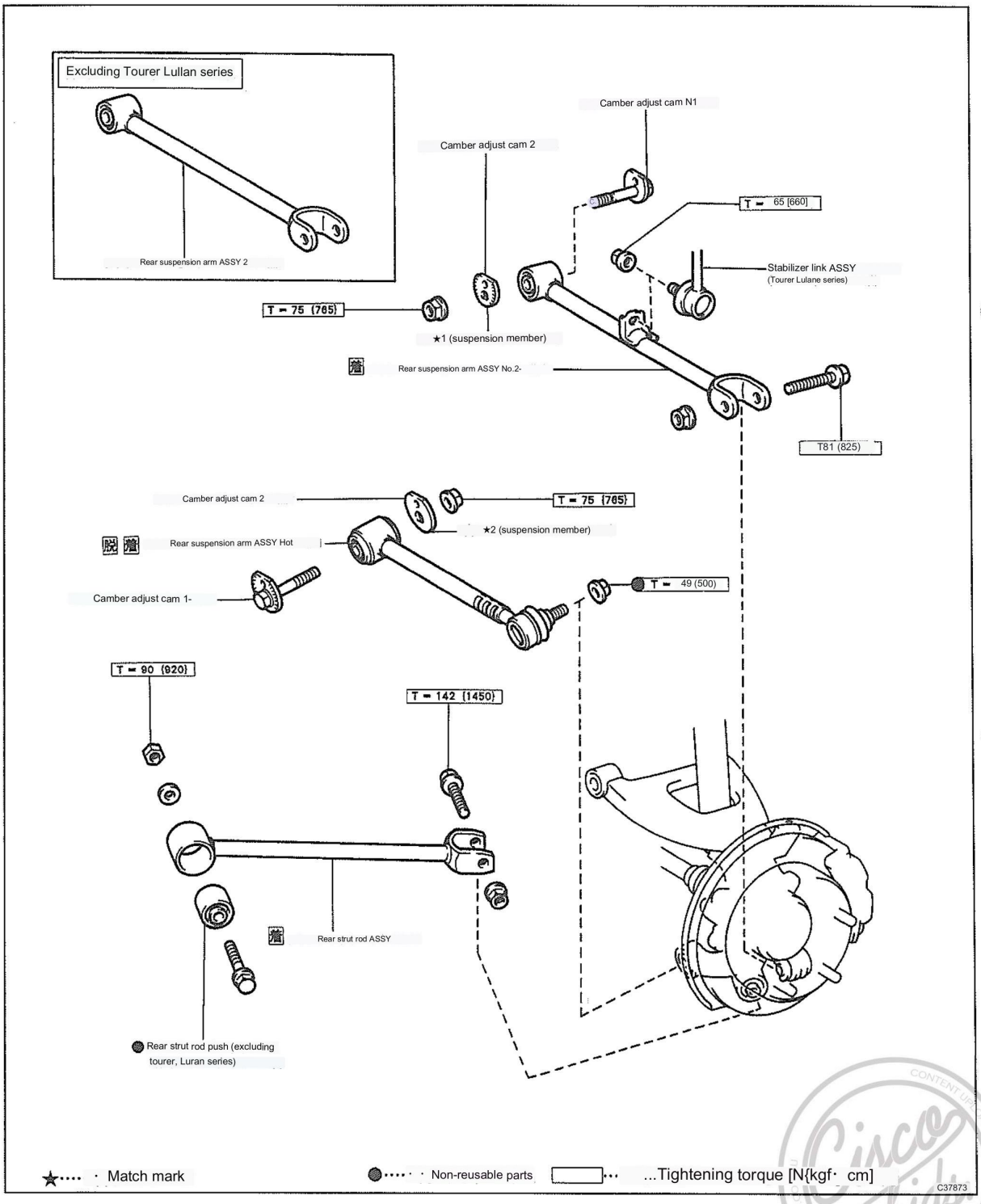
TG048543

strut rod & suspension arm

Nutrient decomposition diagram



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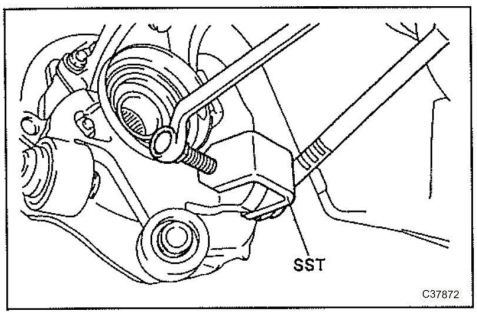


strut rod &

Points to note when installing and removing suspension arms

1 Removing rear suspension arm ASSY No.

1 (1) Using SST, remove rear suspension arm ASSY No. 1.

Remove.

S S T 09628-10011

注意 Do not damage the ball joint dust cover.

2 Full tightening of strut rod and suspension arm

(1) Calm the vehicle.

(2) Jack up the axle carrier through a piece of wood and suspend

load on the tion .

(3) Tighten the strut rod mounting nut.

(4) Installing rear suspension arm ASSY No. 1 and No. 2

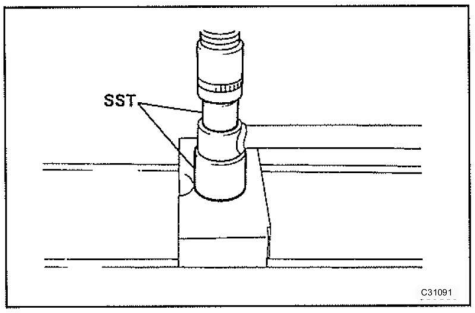
Tighten the nut.

注意 Camber Adjust Cam No.1 and Rear Suspension Men

Align the alignment marks on the bar and install.

3 Rear wheel alignment inspection and adjustment

(see "Wheel alignment" - "Rear wheel alignment inspection and adjustment")



Rear strut rod bush replacement

(Excluding tourer, Luran series)

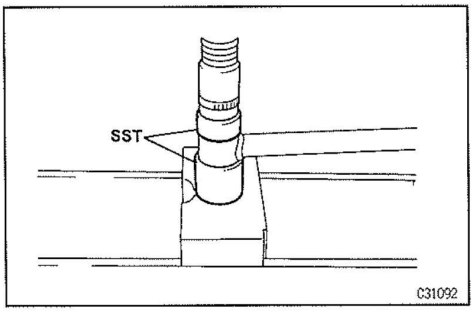
9

1 Removing rear strut rod bushing

(1) Use SST and press to remove bushing from strut rod.

Remove it.

S S T 09710-01051 09710-03140

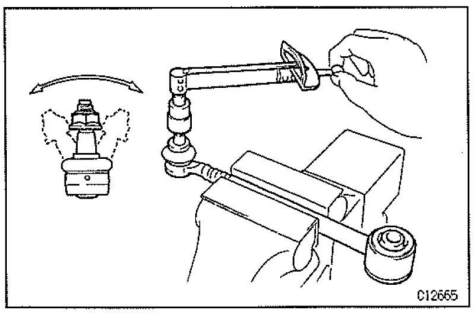


2 Installing the rear strut rod bushing

(1) Using the SST and press, install the new bushing into the strut rod.

press fit into the

S S T 09710-03110 09710-03140



Suspension arm No.1 ball joint inspection

1 Check ball joint rotation condition

(1) After reciprocating the stud 5 times in the swinging direction, the speed is 2 to 4 seconds/rotation.

Rotate continuously and measure the fifth time.

Standard value 0.98~3.43N·m {10~35kgf·cm} (during rotation)

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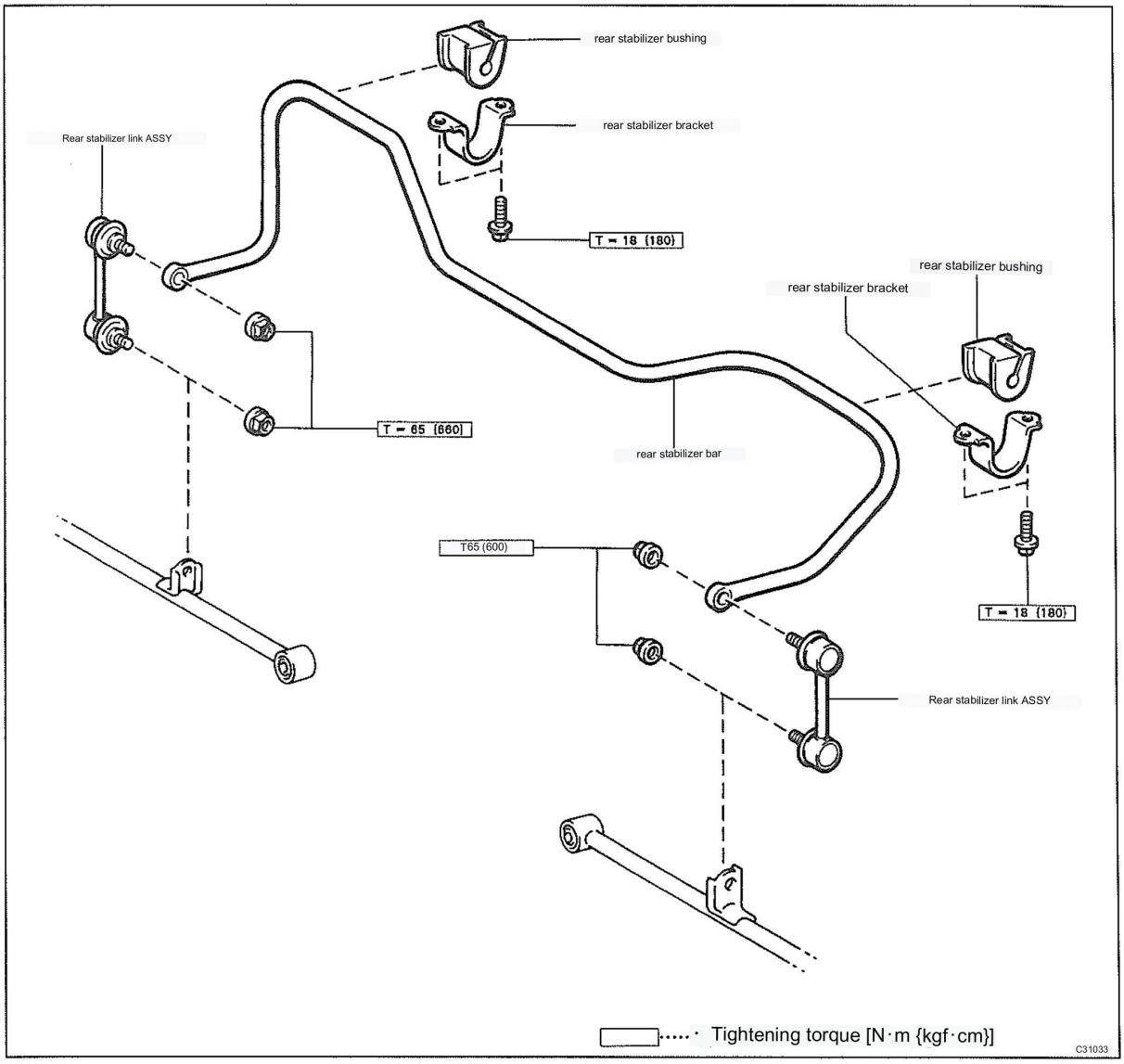
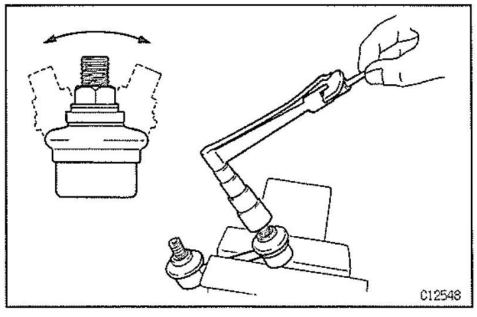
T0045544

stabilizer bar & Link

Detachment configuration diagram





Stabilizer link inspection

1 Ball joint rotation check

(1) After reciprocating the stud 5 times in the swinging direction, the speed is 2 to 4 seconds/rotation.

Rotate continuously and measure the fifth time.

Standard value 0.05~1.96N·m {0.5~20kgf·cm}

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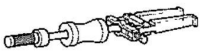
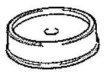
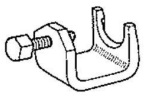
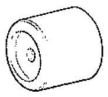
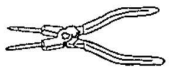
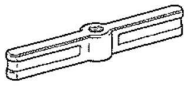
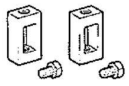
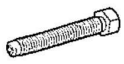
T00465545

rear axle

supplies

S S T

	09223-15020	Oil Seal & Bearing Replacer	Oil seal (inner side) for assembly
	09308-00010	oil seal puller	For oil seal removal
	09527-17011	Rear axle shaft bearing remover	For bearing assembly
	09608-32010	Steering knuckle oil seal replacer	|Oil seal (outer side) for assembly
	09628-10011	ball joint puller	Rear suspension arm No. 1 removal For hub bolt removal
	09649-17010	steering knuckle tool	For axle shaft assembly
	09905-00013	Snap ring pliers	Axle shaft snap ring removal and removal
	09950-40010	Blur B set	
	(09951-04020)	Hanger 200	For removing the axle shaft For removing the bearing inner race
	(09952-04010)	Slide arm	Axle shaft removal 用 For bearing inner race removal
	(09953-04010)	Center bolt 100	For removing the axle shaft For removing the bearing inner race
	(09954-04010)	Arm 25	For axle shaft removal Bearing inner race removal 用

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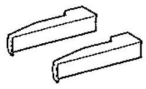
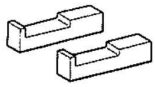
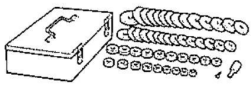
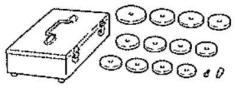
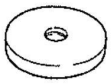
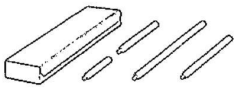
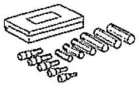
	(09955-04010)	Crow No.1	For bearing inner race removal
	(09955-04050)	Crow No. 5	For axle shaft removal
	(09957-04010)	Attachment	For removing the axle shaft For removing the bearing inner race
	(09958-04010)	holder	For axle shaft removal For bearing inner race removal
	09950-60010	Ribracer set	
	(09951-00420)	Replacer 42	For bearing inner race removal
	Replacer 43 09951-00430	70113	For axle shaft removal
	Replacer 58 09951-00580	70128	For bearing removal
	Replacer 62 09951-00620	70132	For rear axle shaft assembly
	09950-60020	Replacer set No.2	
	(09951-00780)	Replacer 78	For bearing assembly
	Replacer 91 09951-00910	70146	For dust deflector No. 2 assembly
	09950-70010	Handle set	
	(09951-07100)	Handle 100	For removing and removing rear axle shaft bearing For assembling rear axle shaft

E-King

	09040-00010	Hexagon wrench set	

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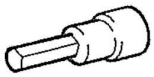 (09043-20060) Socket hexagon wrench 6		Starizer link removal/removal
Socket hexagon wrench 8 09043-2008 0	70025	Drive shaft removal and removal (Vehicle equipped with 1JZ-GE)
socket hexagon wrench 10 09043-20100	70026	Drive shaft removal and removal (Vehicle equipped with 2JZ-GE)
Socket wrench (32mm)	10103	Drive shaft lock nut removal and removal
plastic hammer	12101	For drive shaft removal

計 器

Dial gauge	21201	For checking bearing axial play For checking axle shaft runout

Oils and fats Others

Toyota genuine MP grease No.2	30204	For application to oil seal lip
wire	52015	For suspending brake caliper
Piece of wood	53601	For axle carrier removal and rear suspension final tightening
Nut (M12×P1.5mm)	54603	For hub bolt installation
plate washer	54626	For hub bolt installation

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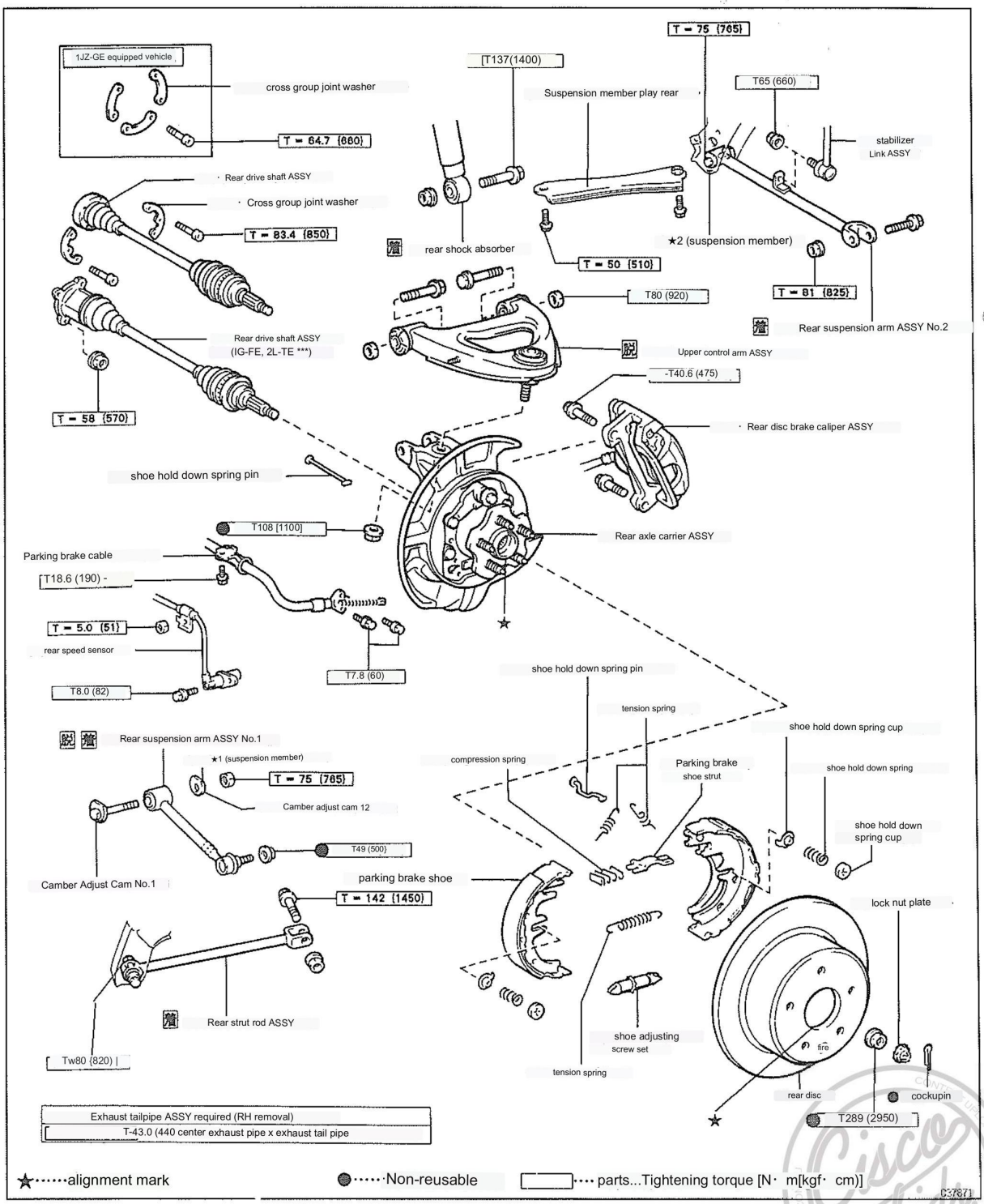
T00485A6

Removal Configuration

Diagram



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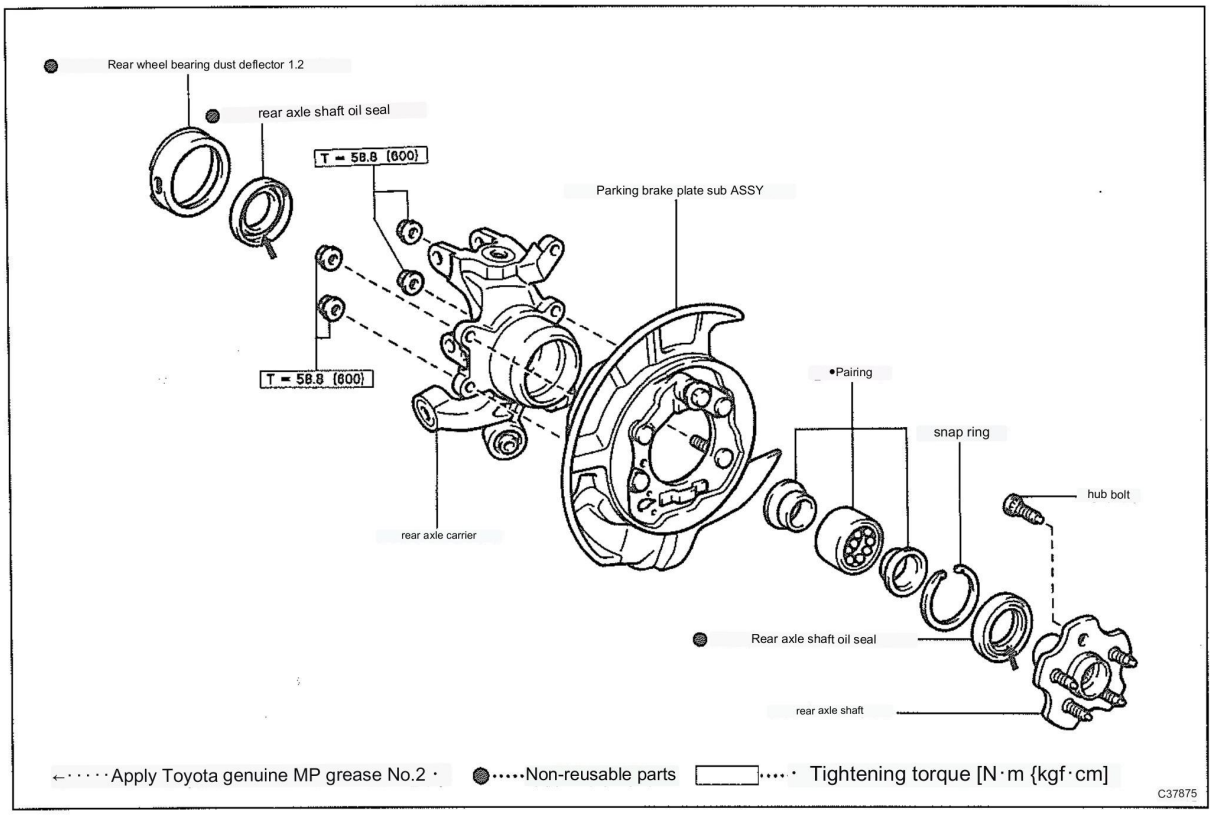
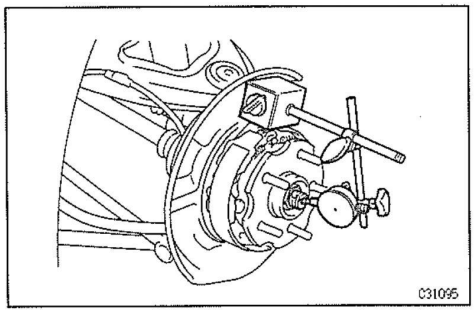
Exploded configuration diagram





Rear axle shaft bearing inspection

1 Inspection of play in the bearing axial direction

(1) Attach a dial gauge to the parking brake plate and check for looseness in the axial direction of the bearing at the tip of the drive shaft.

Limit 0.05mm

rear axle carrier

W/ Points to note when installing and removing rear axle shaft

1 Rear axle carrier W/ Upper control arm

Disappearance

(Refer to "Upper Control Arm" - "Notes on Upper Control Arm Removal Work")

2 Upper control arm ASSY installation

and removal ("Upper control arm" -See "Points to note when attaching and detaching the upper control arm")

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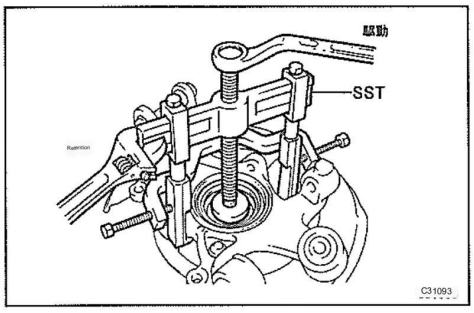
rear axle carrier

W/ Rear axle shaft disassembly

of rear wheel bearing dust deflector No.

2 (1) Using a screwdriver, remove dust deflector

No. 2.



2 Removal of rear axle shaft

(1) Remove the 4 nuts on the parking brake plate.

(2) Remove the shoe hold down spring pin. (3)

Using SST, remove the axle shaft from the axle carrier.

Remove.

S S T 09951-00430 09951-04020 09952-04010
09953-04020 09954-04010 09955-04050
09957-04010 09958-04010

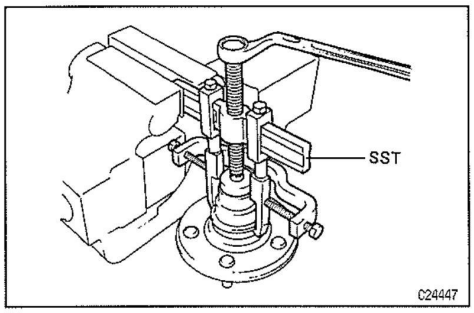
Caution Bear Threaded part of SST center bolt (09953-04020), and tip

Use by applying oil to the ends.

(Four) Remove the parking brake plate.

(5) Using SST and press, remove bearing inner race (a

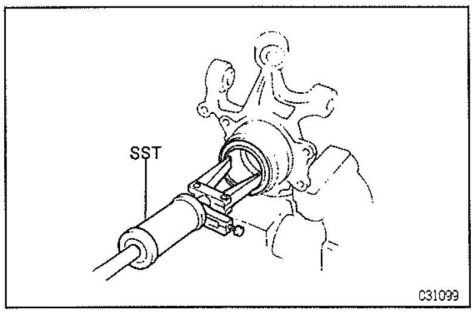
(outer side) from the axle shaft.



S S T 09951-00420 09951-04020 09952-04010
09953-04020 09954-04010 09955-04010
09957-04010 09958-04010

注意 Apply oil to the threaded part and tip of the SST

center bolt (09953-04020) before use.

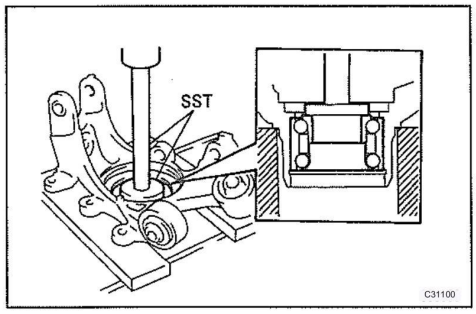


3 Removal of rear axle shaft oil seal

{1} Use SST to install the outer and inner oil seals.

Remove.

S S T 09308-00010



4 Rear axle shaft bearing removal

(1) Using SST, remove the axle shaft snap ring.

vinegar.

S S T 09905-00013

(2) Insert the removed bearing inner race into the bearing inner

Attach it to the inner side.

(3) Using SST and a press, remove the bearing from the

axle carrier. SST

09951-00580 09951-07100 kids

Congratulations
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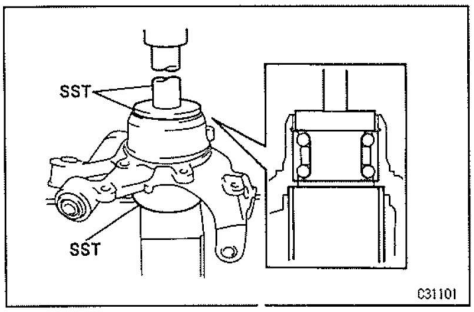


rear axle carrier

W/ Rear axle shaft assembly

1 Rear axle shaft bearing assembly

(1) Remove the inner race from the new bearing.

(Caution) Remember the inner race assembly direction.

(2) Using SST and press, attach the bearing to the axle carrier

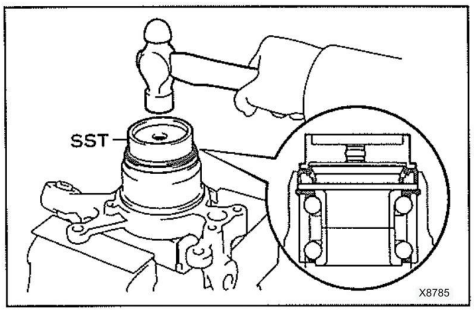
Press fit into.

S ST 09527-17011 09951-00780 09951-07100

(3) Assemble the axle shaft snap ring using SST

Ru.

S S T 09905-00013



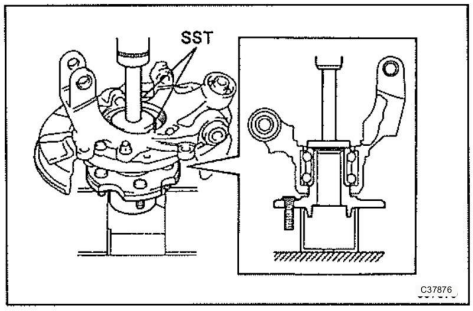
2 Rear axle shaft oil seal (outer side) assembly

(1) Assemble the bearing inner race (outer side).

(2) Using SST, drive a new oil seal into the axle carrier end face.

S S T 09608-32010

(3) Apply a thin layer of MP Grease No. 2 to the lip of the oil seal.



3 Rear axle shaft assembly

(1) Assemble the shoe hold down spring pin.

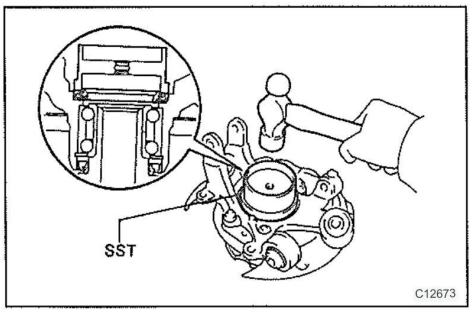
(2) Assemble the parking brake plate with 4 nuts.

(3) Assemble the bearing inner race (inner side).

(4) Using SST and press, attach the axle shaft to the axle

Press into the carrier.

S S T 09649-17010 09951-00620 09951-07100



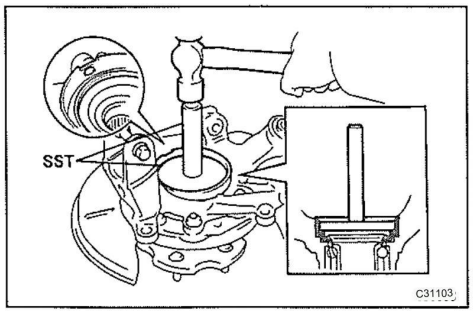
4 Oil seal (inner side) assembly

(1) Using SST, install a new oil seal onto the axle carrier end face.

Type in until.

S S T 09223-15020

(2) Apply a thin layer of MP Grease No. 2 to the lip of the oil seal.



5 Assembling rear wheel bearing dust deflector No.

2 (1) Using SST and a press, press fit the new dust deflector No. 2 into the axle carrier.

S S T 09951-00910 09951-07100

Align the hole for the speed sensor with the hole in the axle carrier.

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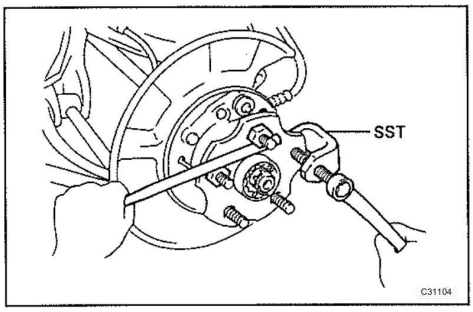


hub bolt replacement

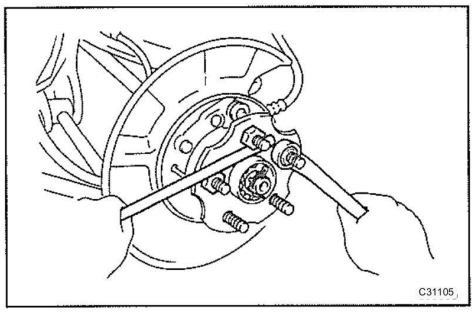
1 Remove parking brake shoe

(Refer to "Brake" - "Parking brake" - "Removal")

2 Hub bolt removal

(1) Using SST, remove the hub bolt.

S S T 09628-10011



3 Installing hub bolts

(1) Install a new hub bolt to the axle shaft and plate

Tighten the nut (nominal diameter 12mm, pitch 1.2) using the washer.

while attaching the hub bolt.

4 Installing the parking brake shoe

(Refer to "Brake" - "Barking brake" - "Removal")

9

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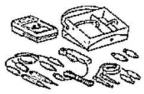
T0049541

Skyhook TEMS

Preparation

product

soup bowl

	09082-00012	toyota electrical tester	For inspection of each part
	(09083-00060)	mini test lead	For computer inspection
	09843-18020	Diagnosis check wire	Diagnosis connector, for TDCL and DLC3 short circuits
	09991-50100	Toyota Diagnosis Reader Set	For reading diagnosis codes
	09991-50320	Program IC card Engine system 3	For reading diagnosis codes
oscilloscope	20501		For computer inspection
circuit tester	20702		For diagnosis code reading and function points (analog pointer type)

Oils and fats Others

Light emitting diode (recommended operating current 10~20mA)	54401	Diagnosis code reading and function points For sticks

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Congratulations times
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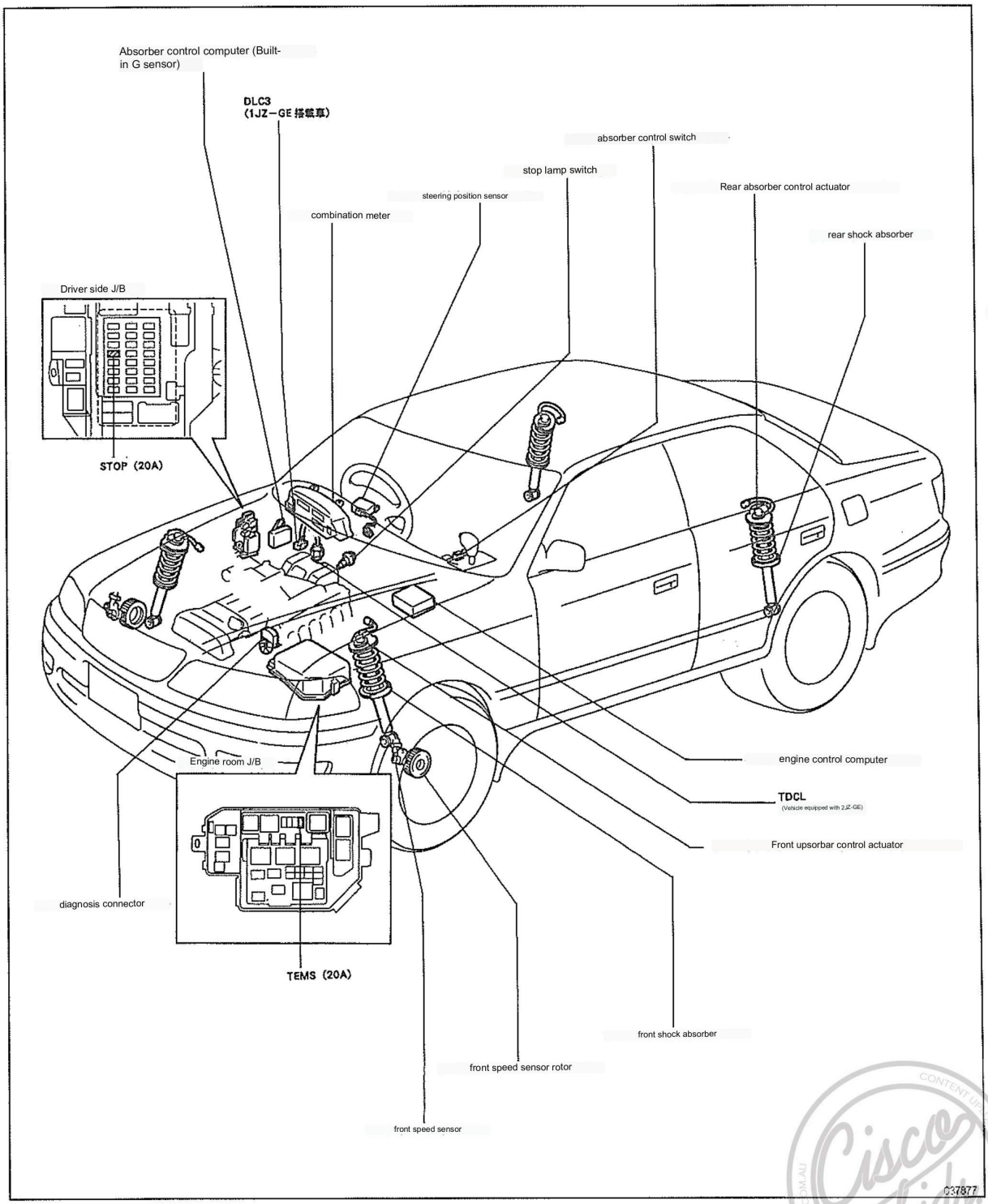
T0040542

Parts layout diagram



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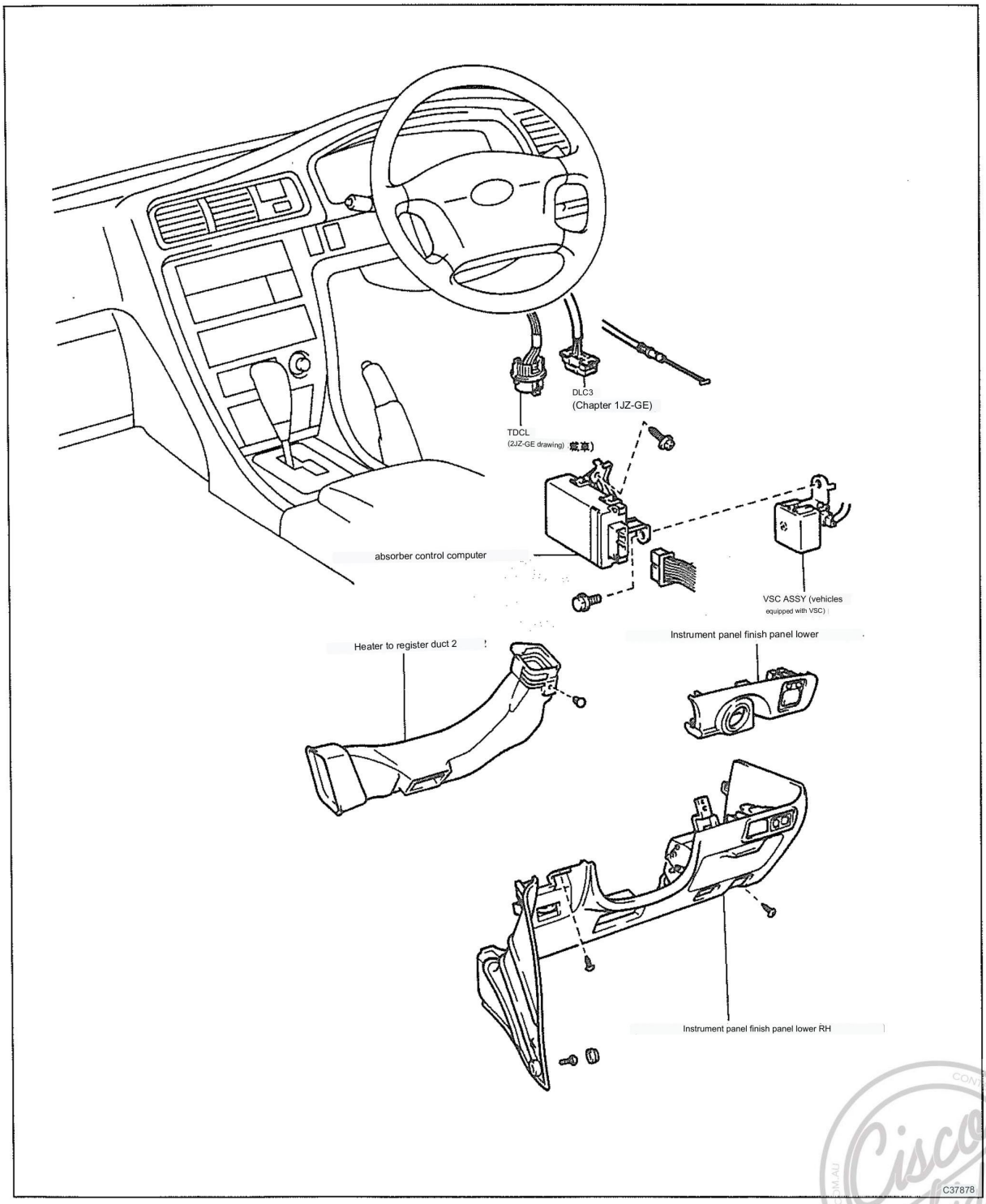
T0040545

absorber control computer

Detachment configuration diagram



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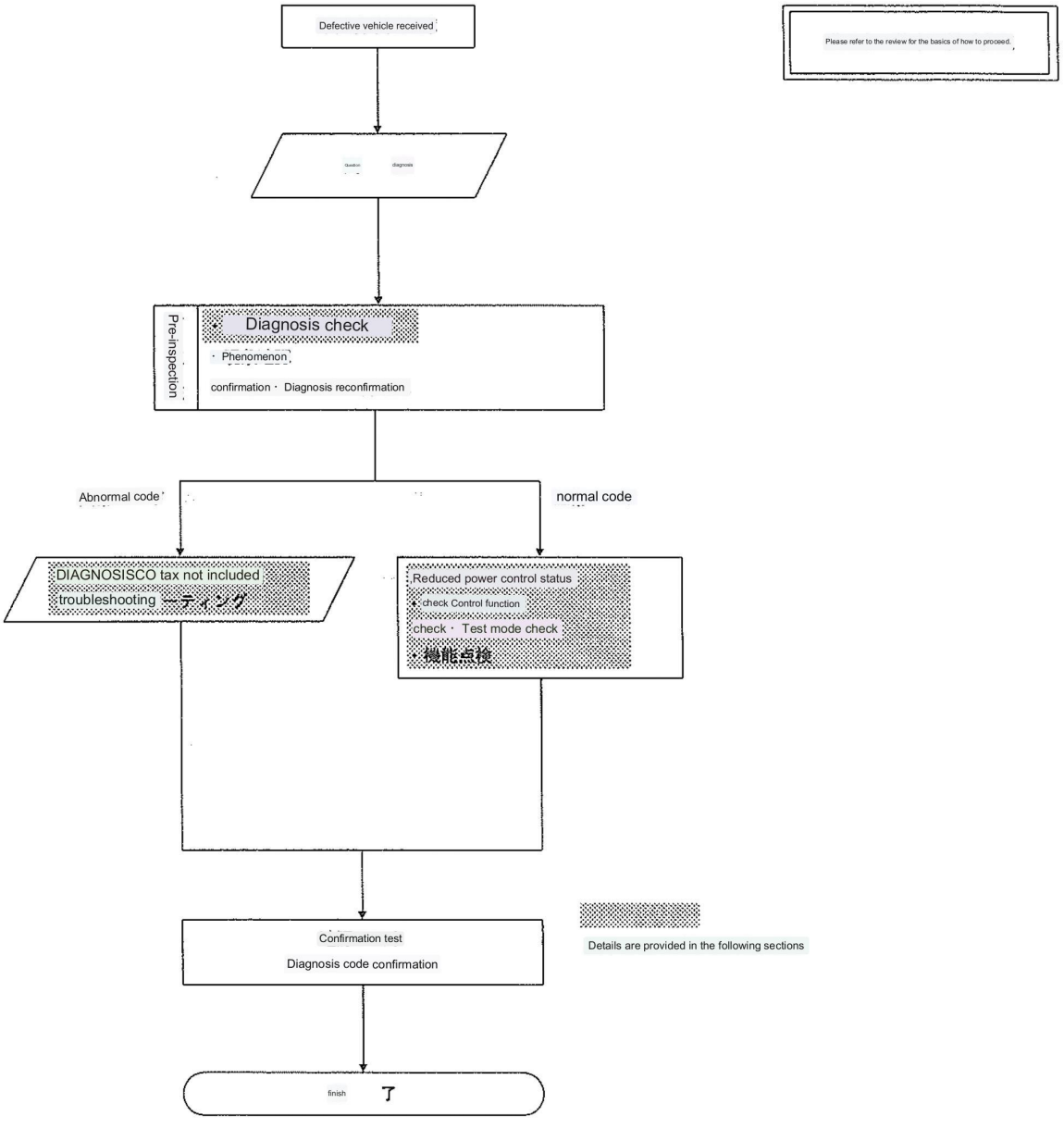
T0040544

troubleshooting

How to proceed with troubleshooting

1 How to proceed with troubleshooting



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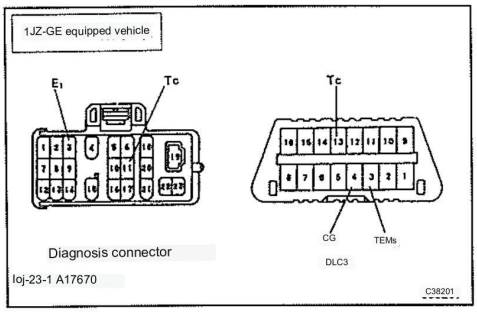
Diagnosis check

1 Diagnosis check

注意 The memory of the diagnosis code will be erased when the engine is stopped (ignition switch OFF).

(1) Battery voltage check

Standard value 10~14V (at idling)



Readings by circuit tester

(2) TEM terminal output check

(Refer to "Skyhook TEMS" - "Functional Inspection" - "TEM Terminal Output Inspection")

(3) Short-circuit between TcE1 of the diagnosis connector or TcE1 of TDCL (2JZ-GE) and TCG terminal of DLC3 (1JZ-GE).

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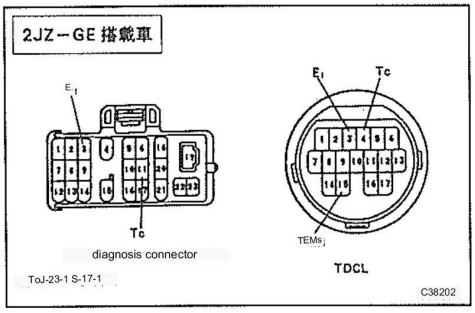
(4) Connect a circuit tester (analog needle type) between TEM ↔E1 of TDCL (2JZ-GE) and TEM CG terminal of DLC3 (1JZ-GE).

Ru.



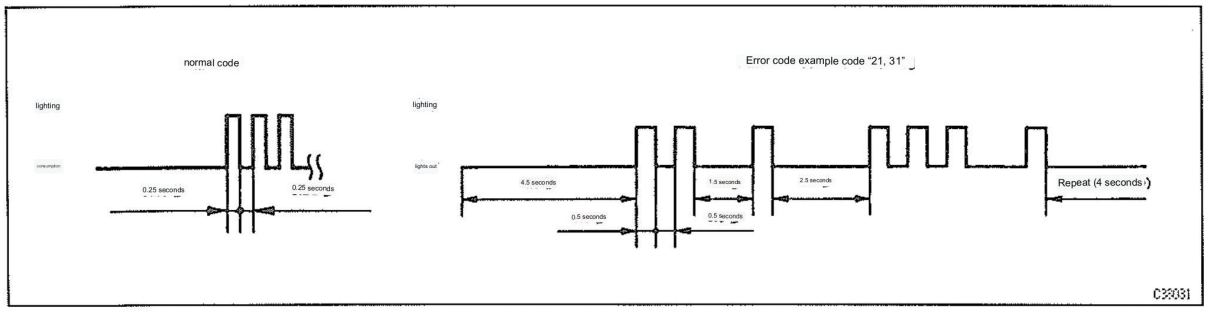
(5) Turn on the ignition switch and turn on the circuit tester.

Read the number of times the pressure changes from 1.2V or less to 7V or more.

(*) · Under normal conditions, the pointer repeats between 1.2V and below and 7V and above every 0.25 seconds.

Go back.

· If there are two or more abnormalities (diagnosis codes), the code Display in descending order of numbers.· You can also check the output of the TEM terminal by connecting an LED between the TEME terminals.



Reading by Toyota Diagnosis Reader (TDCL only)

(2) Diagnosis using Toyota Diagnosis Reader

Read the code.

(3) Enter the engine system code.

<Reference> 2JZ-GE equipped vehicle...81C

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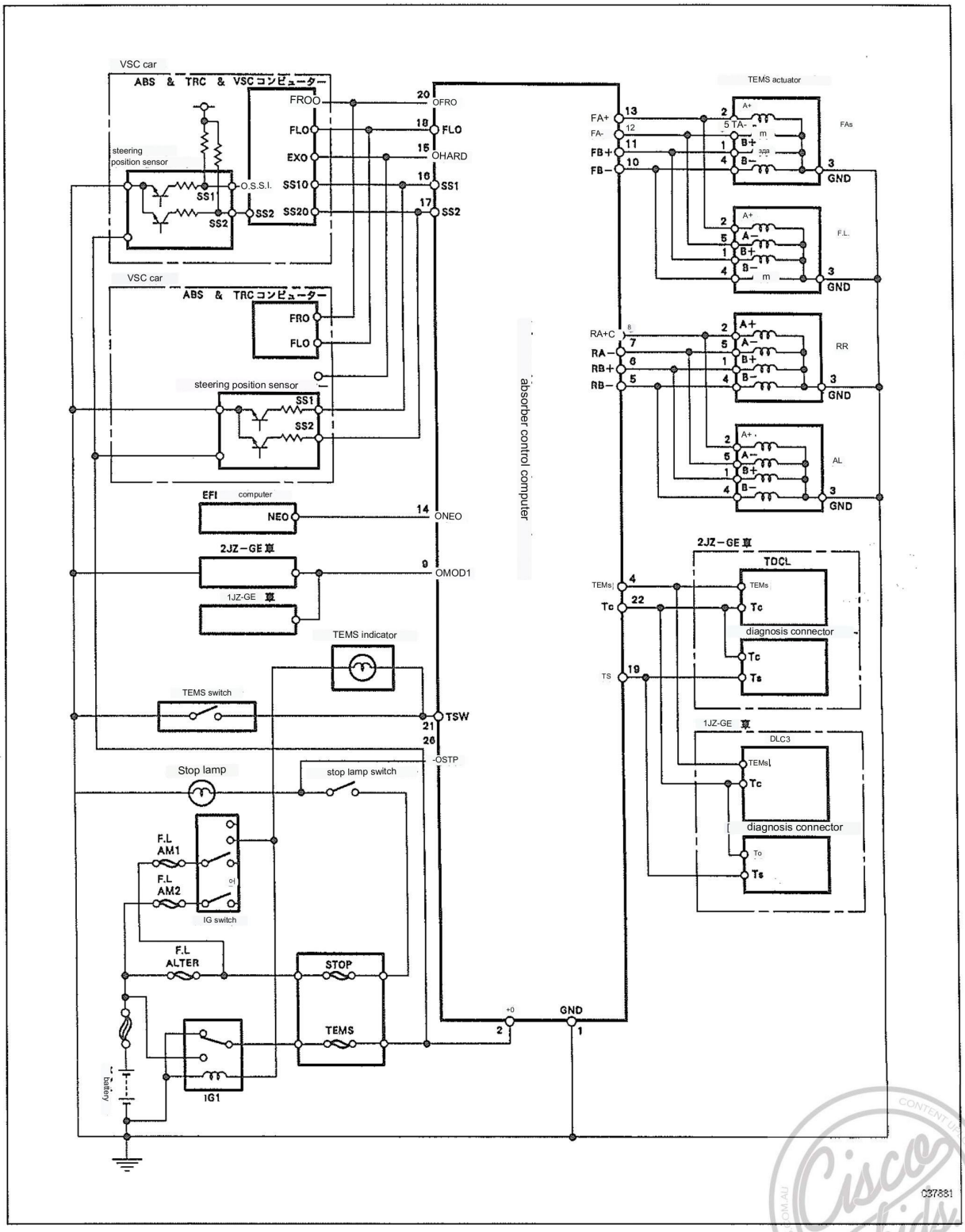
times road figure



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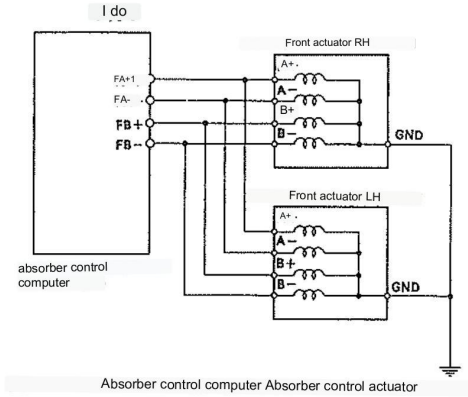
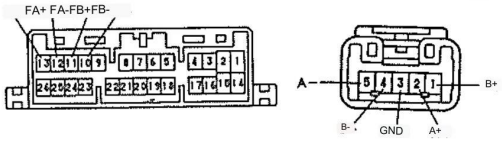
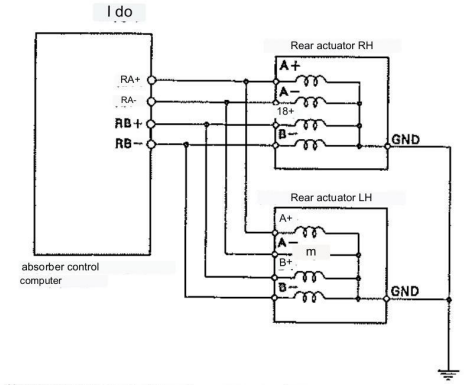
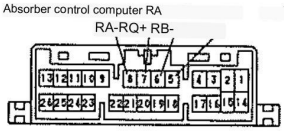
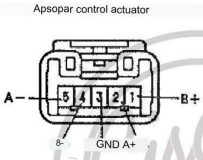
Troubleshooting by diagnosis code

1 Diagnosis code

code number	Examination items Examination contents ① Diagnostic conditions ② Abnormal condition	Point part
21	**Front absorber control actuator short** ① When driving the actuator ② Overcurrent flowed into the front drive circuit.	Inspection method: Based on the relationship diagram • Individual inspection of each part (see page 969)) · Wire harness inspection · Connector inspection I do  Absorber control computer Absorber control actuator 
23	**Rear absorber control actuator short** ① When driving the actuator 2 Overcurrent flowed into the rear drive circuit.	Inspection method: Based on the relationship diagram · Inspection of each part individually (see page 9169) · Wire harness inspection · Connector inspection I do  Absorber control computer RA  Apsopar control actuator 

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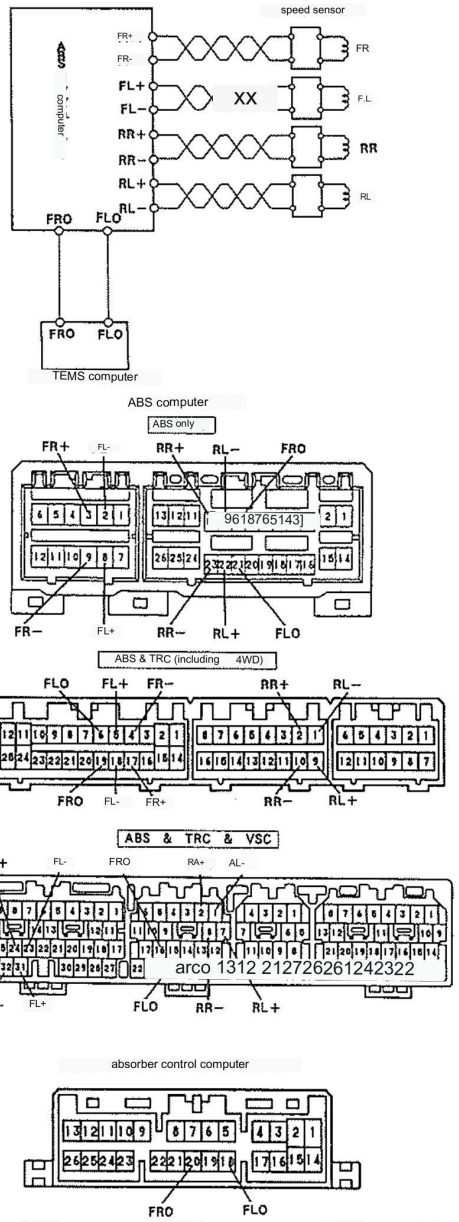
code number	Diagnostic items Diagnosis details ① Diagnosis conditions ② Abnormal condition	Inspection area
31	Acceleration sensor signal abnormality	Inspection method: Absorber control computer unit inspection
34	Front wheel speed signal abnormality	Inspection method: Individual inspection of each part based on the relationship diagram (969 page)
35	Rear wheel speed signal abnormality ① Drive at a vehicle speed of 20km/h or higher ②Only the number of pulses corresponding to less than 20 km/h is input in the vehicle speed signal.	
41	Engine speed signal abnormality ① Driving at engine speed of 2000r/min or more ② Pulse corresponding to engine speed signal less than 2000r/min Only numbers are entered	Inspection method: • Based on the circuit diagram • Engine control computer · Absorber control computer~ Engine control computer wires Harness

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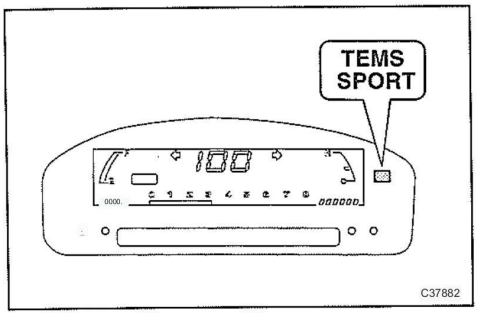


Functional check

"TEMS SPORT" indicator check

1 "TEMS SPORT" indicator check

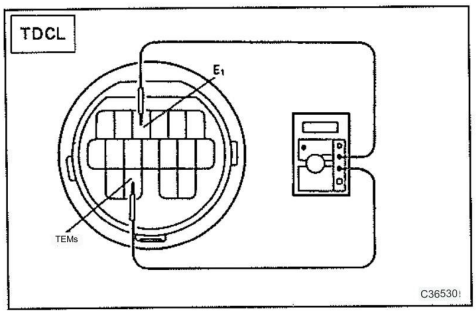
(1) Set the absorber control switch to "SPORT".

(2) Turn on the ignition switch.

Standard "TEMS SPORT" indicator lights up (3) Set the absorber control switch to "NORM".

Criteria "TEMS SPORT" indicator goes out TEM

terminal output check (circuit tester check)



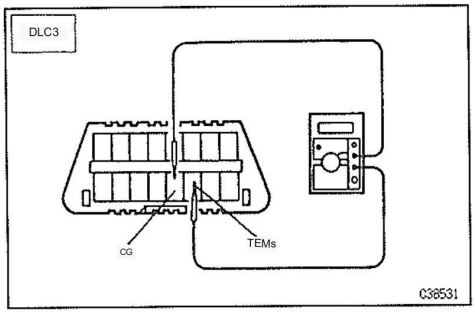
1 Circuit tester connection (analog pointer type)

(1) Turn off the ignition switch. (2) Connect a circuit tester between TEME1 of TDCL (2JZ-GE) and TEM CG terminal of DLC3 (1JZ-GE).

2 Circuit tester runout check

(1) Turn on the ignition switch.

Standard: The pointer swings below 1.2V → above 7V for about 2 seconds.



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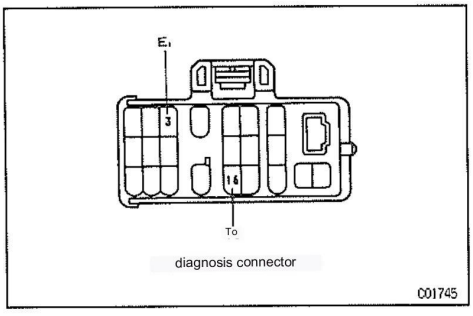

Damping force control status check

1 Damping force check (absorber function check) (1) Turn the ignition switch OFF and connect the diagnosis connector. short between the TsE terminals of the connector (test mode). (2) Start the engine.

<Reference> At this time, the actuator position will be 1 (soft). (3) From the state of (2), each time the brake pedal is depressed, the actuator The position increases from 1 → 3 → 5 → 1517.

<Reference> If you want to fix the actuator at any position, use (3).

After setting the position to the desired position using the method, increase the vehicle speed to 6 km/h or higher. do. After that, the actuator is turned off until the ignition switch is turned OFF. The ether position remains unchanged.

(4) Open the Ts → E" terminals of the diagnosis connector.

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Control function check

Note · Each inspection can be performed consecutively.

· When checking any of 2 to 6, be sure to check 1 first.

I will do

it.· If the ignition switch is turned off during inspections 2 to 6.

If so, be sure to check 1 before each inspection.

1 Circuit tester runout check

(1) Make the wheels go straight.

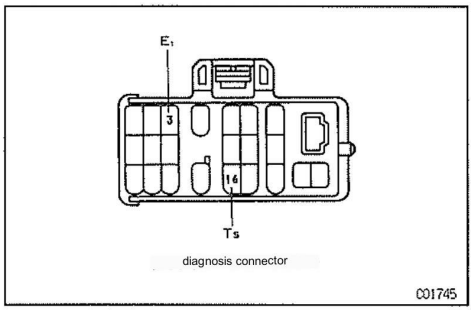
(2) Turn off the ignition switch.

(3) Connect the circuit tester to TDCL (2JZ-GE) TEM→E1, DLC

Connect between the TEM CG terminals of 3 (1JZ-GE).

(4) Short-circuit the Ts → E1 terminals of the diagnosis connector. (5) Turn on the ignition switch and the needle will rise from 1.2V to 7V for 2 seconds.

After swinging above 1.2V, confirm that the needle swings above 7V.



2 Speed sensor function check

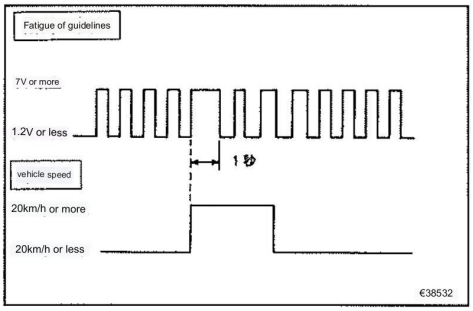
(1) Place the front and rear wheels on the speedometer tester.

(2) Start the engine, increase the vehicle speed to 20km/h or higher, and check if the pointer is shaking.

Check.

standard

vehicle speed	Pointer deflection
20km/h or more	1.2V or less 7V or more (1
Less than 20km/h	second) 1.2V or less Repeat 7V or more



Caution • Keep the steering wheel in a straight line.

· When checking the pointer deflection, do not press the brake pedal.

stomach.

3 Steering sensor function check

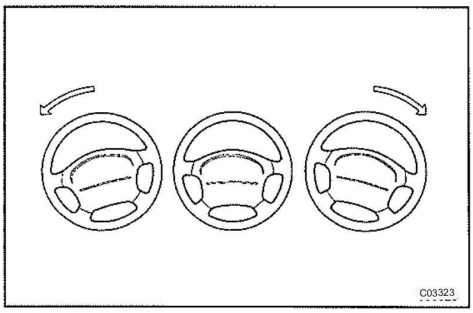
(1) Move the shift lever to "P" range and apply the parking brake. (2) Start the engine.

3) Turn the steering wheel more than 36 degrees to the left or right from a straight-ahead state.

the needle and check the deflection condition of the pointer.

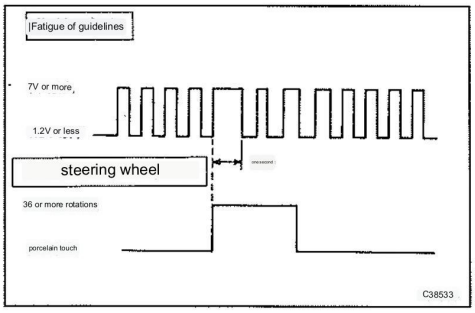
Standard

Steering wheel condition	Pointer deflection
Straight ahead state	1.2V or less Repeat 7V or more
36 or more rotations	1.2V or less → 7V or more (1 second)



Caution - If you do not rotate the steering wheel more than 36 degrees, the needle will repeat 1.2V or less and 7V or more.· When checking the pointer deflection, do not press the brake pedal.

stomach.



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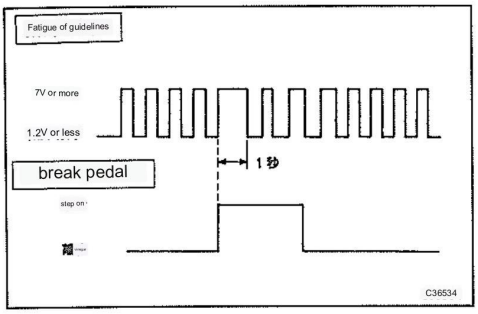
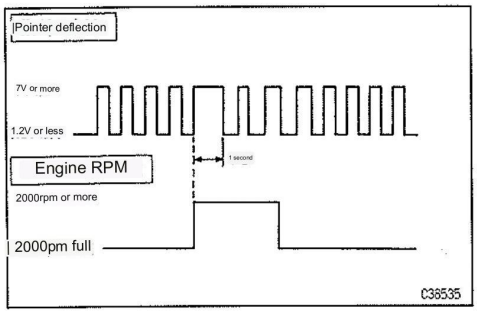


4 Stop lamp switch inspection

(1) Turn the steering wheel straight ahead. (2) Depress the brake pedal and check the deflection of the pointer.

standard

break pedal	Pointer deflection
step on	12V or less → 7V or more (1 second)
let go	1.2V or less Repeat 7V or more



5 Engine speed pulse signal check

(1) Move the shift lever to "P" range and apply the parking brake. (2) Start the engine. (3) Increase the engine speed to 2000 rpm or higher and check the pointer deflection.

standard

Engine RPM	Pointer deflection
2000rpm or more	1.2V or less 7V or more (1 second)
Less than 2000rpm	1.2V or less Repeat 7V or more

<Attention> When checking the pointer deflection, do not press the brake pedal.

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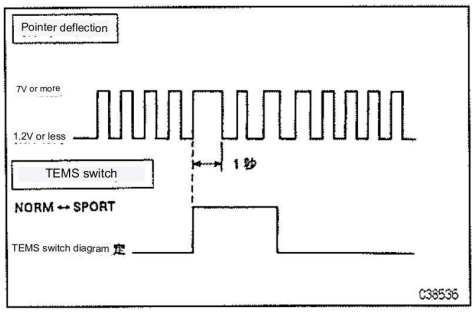


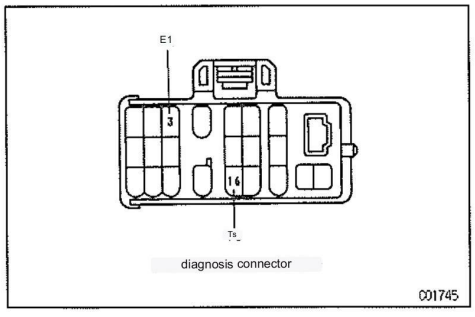
6 TEMS switch inspection

(1) Turn on the ignition switch. (2) Move the TEMS switch to “NORM” ↔ and “SPORT” and check the deflection of the pointer.

standard

TEMS switch	Pointer deflection
NORM↔SPORT	12V or less → 7V or more (1 second)
TEMS switch fixed	1.2V or less Repeat 7V or more

注意 When checking the pointer deflection, do not press the brake pedal.



7 Diagnosis connector open

(1) Open the Ts → E” terminals of the diagnosis connector.

<Reference> When opening the diagnosis connector, it is not necessary to turn the ignition switch to OFF.

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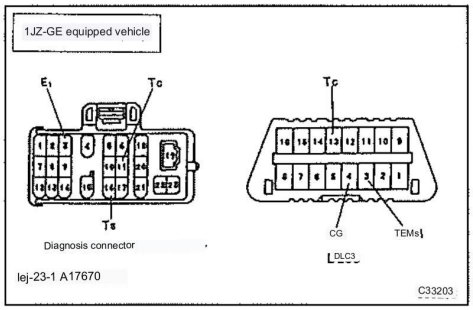

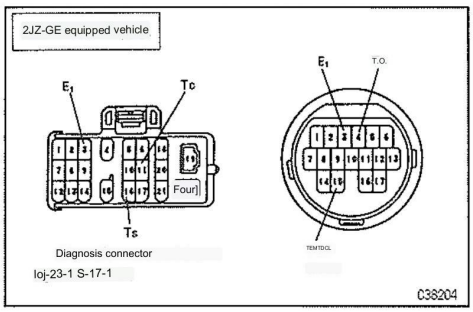

Test mode inspection

<Reference> •About test mode

When switching from normal mode to test mode, each computer first memorizes the test mode codes for all inspection items of the TEMS, ABS, and TRC systems. Each inspection item is operated, and if the computer determines that it is normal, the test mode code is erased. Therefore, when testing only one system, the test code of other systems will not be erased.

There are some bad things.

- How to switch from normal mode to test mode

With the ignition switch OFF, short-circuit the T and E terminals of the diagnosis connector, and then turn the ignition switch ON.

- How to switch from test mode to normal mode

Diagnosis Connector TsE" Open the terminals and connect the

Turn the gas switch from ON to OFF.

1 Battery voltage check

Standard value 10~14V (when engine is stopped)

2 Test mode inspection

(1) Turn ignition switch OFF.

(2) Short-circuit the TsE terminals of the diagnosis connector.

•Caution: Do not short-circuit the TcE and terminals of the diagnosis connector.

(3) Start the engine.

(4) Input the diagnostic signal.

① Drive at a speed of 20km/h or

注意 higher. Diagnostic codes are erased when the ignition switch is turned OFF, so do not stop the engine.

② Turn the steering wheel to the left or right by more than 36 degrees per second. and return to straight-ahead

condition. ③ Depress the brake pedal once.

④ Increase the engine speed to 2000rpm or higher and return to idling.

vinegar.

⑤ Operate the absorber control switch to "NORM" and "SPORT".

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3 Code reading

注意 Diagnosis connector Tg→E, do not open between terminals.

Readings by circuit tester

(1) Connect a circuit tester (analog pointer type) between TEM ↔→ E1 of TDCL (2JZ-GE) and TEM CG terminal of DLC3 (1JZ-GE).

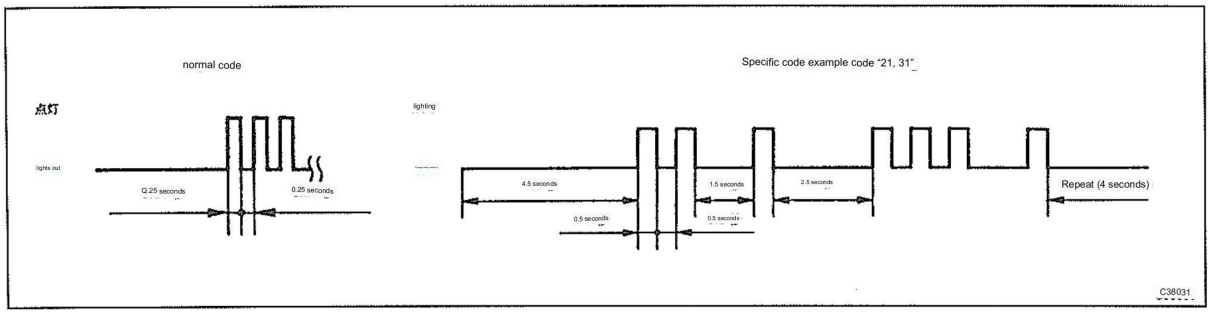
(2) Short-circuit the TcE of the diagnosis connector or the TcE1 of TDCL (2JZ-GE) and the Tc CG terminal of DLC3 (1JZ-GE).

Ru.

(3) Read the swing period of the pointer.

<Reference> · When normal, the pointer repeats 1.2V or less and 7V or more every 0.25 seconds. Go back.

· If there are two or more abnormalities (diagnosis codes), the code Display in descending order of numbers.



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(4) Stop the engine.

(5) Open the TE terminal of the diagnosis connector.

(6) TEM of TDCL (2JZ-GE)→E1, TEM of DLC3 (1JZ-GE) ↔Open the CG terminals.

(7) Diagnosis connector TcE1 and TDCL (2JZ-GE)'s TcE1 DLC3 (1JZ-GE)'s TCG terminals.

Ru.

注意 To store the code, stop the engine (ignition switch OFF) then it will be deleted.

Reading by Toyota Diagnosis Reader

(1) Read the diagnosis code using the Toyota Diagnosis Reader.

(2) Enter the engine system code.

<Reference> 2JZ-GE equipped vehicle...81C

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4 Test mode code list

code number	Diagnostic item	Diagnosis details	Bug content
21	front absorber control actuator short	When the actuator was driven, an overcurrent flowed into the front drive circuit.	① Short inside front right or left actuator ② Computer front right or left actuator Wire harness short between tuators ③ Computer internal error
23	rear absorber control actuator short	When actuator is driven, rear side drive An excessive current flowed through the circuit.	① Short circuit inside rear right or left actuator @ Wire harness short between computer rear right or left actuator ③ Computer internal abnormality
31	Acceleration sensor signal error		① Acceleration sensor internal error ② Computer internal error
34	Front wheel speed signal abnormality	Only the pulse number corresponding to less than 20 km/h is input in the wheel speed signal.	①) Vehicle speed is not over 20km/h ② ABS speed sensor abnormality ® TEMS computer ABS computer Wire harness disconnection, short, connection between terminals tar off ④ Wheel speed signal abnormality due to abnormality in other systems that share the wheel speed signal ⑤ ABS computer error
35	Rear wheel speed signal abnormality		
36	Steering signal abnormality	Only signals corresponding to less than 36 degrees of steering are input.	① Steering wheel is not turned more than 36° ② Steering sensor abnormality, sensor power supply , Poor grounding ③ Computer Wound between steering sensors Ear harness disconnection, short, connector disconnected
41	Engine speed signal abnormality	Only pulses equivalent to less than 2000r/min are input in the engine speed signal.	① Engine speed is not set to 2000r/min ② Engine control computer abnormality ③ Absorber control computer ↔ Wire between engine control computer Harness disconnection, short circuit, disconnected
42	Stop lamp signal not input	The computer's STP terminal voltage does not exceed 8V.	① connector, stop lamp switch error, power supply error ② Wire harness disconnection, short, or connector between computer stop lamp switch Misalignment ⑧) Stop lamp switch signal due to abnormality in other systems that share the stop lamp switch Abnormality
52	TEMS switch signal error	No change in TEMS switch signal	① TEMS switch abnormality ② TEMS switch Wire harness between computers disconnected, shorted, connector disconnected ③ Set the TEMS switch to “NORM” and “SPORT” not moving

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T0049547

Single body inspection

stop lamp switch

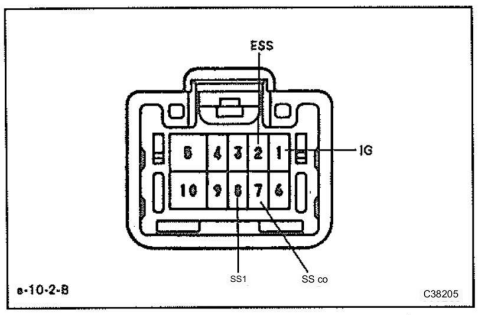
(Refer to "Brake" - "Anti-lock brake system (ABS)" - "Individual inspection")

speed sensor

(Refer to "Brake" - "Anti-lock brake system (ABS)" - "Individual inspection")

engine speed sensor

(Refer to "Engine" - "Individual inspection")



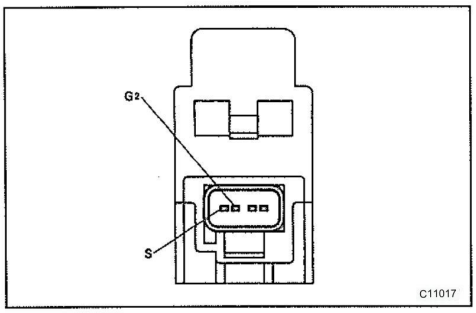
steering position sensor

1 Resistance measurement

(1) Remove the steering position sensor. (2) Connect the + of the battery to the IG terminal of the connector, and the + of the battery to the ESS terminal of the connector.

(3) Turn the steering position sensor slowly and check the resistance between the SSESS and SS2 ESS terminals. Repeat

reference ∞ and approximately 100Ω.



absorber control switch

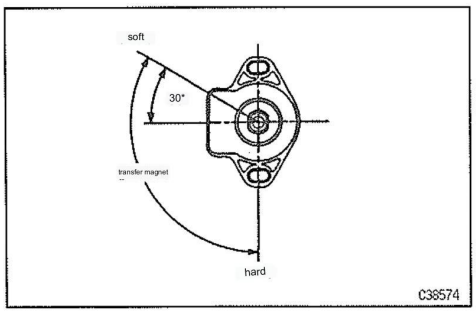
1 Continuity check

(1) Connect the conductor between the SG2 terminals of the absorber control switch.

Inspect.

Standard NORM position... No continuity

SPORT position... ••••••• Continuity



absorber control actuator

1 Inspection of shaft stop position

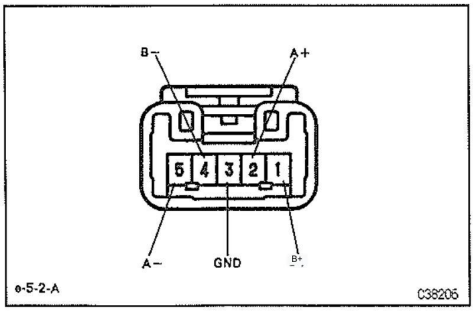
(1) Connect the actuator connector to the vehicle side connector. (2) Short-circuit the “TsE” terminals of the diagnosis connector and connect the

Turn on the nitrogen switch. (3)

Each time the brake pedal is depressed, the shaft rotates in 15° increments.

Check that.

<Reference> Each time the brake pedal is depressed, it rotates up to 120° from the soft position to the hard position in 15° increments.



2 Resistance check

(1) Measure the resistance between each terminal.

measurement terminal	Standard
Between A+ GND terminals	value 12.42
Between B+ GND terminals	12.40
Between A-GND terminals	12.49
Between B-GND terminals	12.40

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absorber control computer

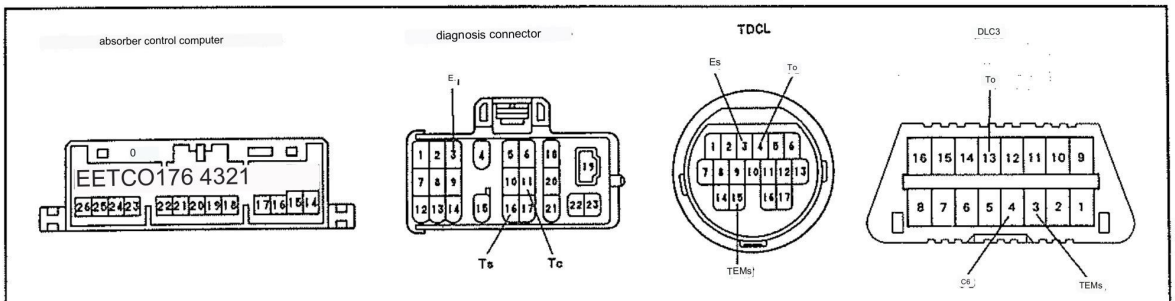
1 Computer inspection

(1) Check the battery voltage. Standard value 10~14V (when engine is stopped)

(2) Connect the mini test leads to the tester and connect each terminal to body ground. Check voltage and continuity between the

Caution

- Connect the connector to the computer and check from the back of the connector.
- Power supply check (10~14V when IG ON) and ground check before inspection (IG OFF, earth terminal, body: 5Ω or less).



Vd-28-2-D lj-23-1 S-17-1 A17670

end 子番号	Terminal symbol	input/output	item	Measuring conditions		Standard () is a bar display of Hz range	Faulty location when outside standard values
1	GND	input	導通	常 Time		導 There is a road	body earth
2	+B	input	Voltage	IG switch ON		10～14V	TEMS Fuse
4	TEMs	output	HZ	IG switch ON, short circuit between TcE1 terminals of diagnosis connector		(blinking)*	Absorber control computer
5	RB−	output	Hz	IG switch ON, Diagnosis connector TsE, short circuit between terminals, Depress the brake pedal			· Absorber control computer · Absorber control actuator
6	RB+	output	Hz				
7	RA-	output	Hz	IG switch ON, TsE of diagnosis connector, short circuit between terminals, depress brake pedal			
8	RA+	output	Hz				
9	MOD1	input	Mizodori	all the time	1JZ-GE equipped vehicle	No continuity	Wire harness between MOD1 terminal and body ground, connector
					2JZ-GE equipped vehicle	With guidance	
10	FB−	output	HZ	IG switch ON, Short circuit between the Ts E1 terminals of the diagnosis connector. press the brake pedal			· Absorber control Roll computer · Absorber control Roll actuator タ一
11	FB+	output	Hz				
12	FA-	output	Hz	IG switch ON Short circuit between TsE terminals of diagnosis connector, press the brake pedal			
13	FA+	output	Hz				

* : Diagnosis code output

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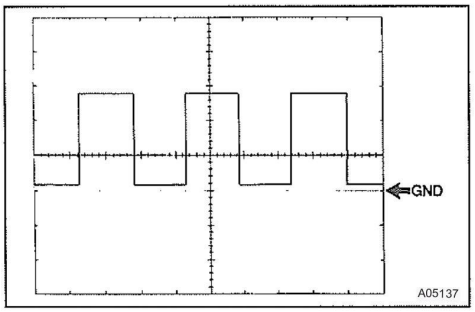
ID	Terminal symbol	input/output	Item	Measuring conditions		basis 準 The bar in parentheses indicates the Hz range.	Faulty location when outside standard values
14	NEO	input	Voltage	When idling		waveform 1	engine control computer
15	HARD	input	Voltage	IG switch ON, after about 1.5 seconds	Excluding VSC equipped vehicles	1.5V or less	ABS & VSC computer
					Vehicle equipped with VSC	10 ~ 14V	
16	SS1	input	Voltage	Turn the steering wheel slowly		waveform 2	steering position sensor
17	SS2						
18	FLO	input	Voltage	Runs at approximately 30km/h		waveform 3	・ ABS computer ・ Front left speed sensor
19	TS	input	電圧	IG switch ON, Diagnosis connector TcE, terminals short 絡		1.5V or less	Diagnosis connector
				IG switch ON, diagnosis connector TcE, terminals open		10 ~ 14V	
20	FRO	input	Voltage	Travels at a vehicle speed of approximately 30km/h		waveform 3	• ABS computer • front right speed sensor
21	TSW	入力	Yosho	IG switch ON, absorber control switch “NORM”		1.5V or less	absorber control switch
				IG switch ON, Absorber control switch "SPORT"		8V or more	
22	TC	input	Fengzhuang	IG switch ON, Diagnosis connector TcE, short circuit between terminals		1.5V or less	Diagnosis connector
				IG switch ON. Diagnosis connector Tc E, open between terminals		10 ~ 14V	
26	STP	input	Yosho	IG switch ON When pressing the brake pedal		8 ~ 14V	stop lamp switch
				IG switch ON When brake pedal is released		2V or less	

JE:3293

(3) Use an oscilloscope to confirm that pulses are generated between each terminal. (Reference)

The oscilloscope waveform shown is a reference example, and noise and chatter Ring waveforms etc. are omitted.



waveform 1

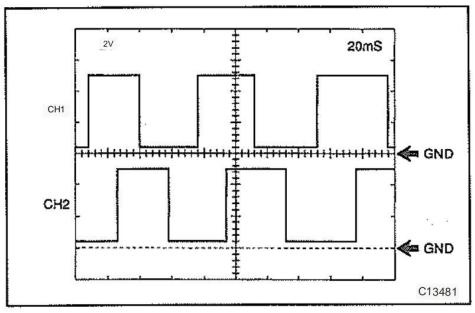
measurement terminal NEO↔GND

Instrument set 5V/DIV, 2ms/DIV

Measurement conditions After warming

UP •Caution As the engine speed increases, the waveform period becomes shorter.

up, at idle CONTENT LOADED BY KIDS.COM.AU Cisco Okids WWW.CISCO Unauthorized reproduction prohibited



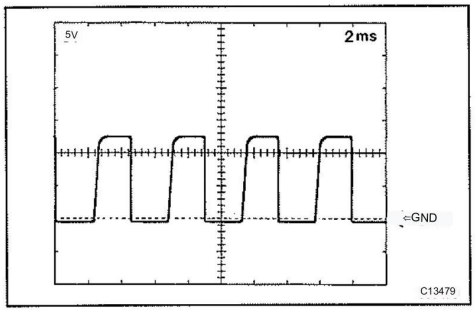
waveform 2

measurement terminal CH1: SS1 GND CH2: SS2 GND

Instrument_2V/DIV,20ms/DIV,

Measurement conditions: 2 x 1 x speed, left turn

注意 - The faster you turn the steering wheel, the shorter the cycle. · SS1 SS 2 signal, mountain stone.



waveform 3

measurement terminal CH1: FLO↔GND CH2: FRO↔GND

Instrument_5V/DIV,2ms/DIV

Measurement conditions Vehicle speed approximately 30km/h Air travel width

注意 車速 The higher the (wheel rotation speed), the shorter the cycle.

9

times steamed noodles

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10 drive shaft

front drive shaft 10-2
preparations, ... 10-2
Front drive shaft 10-4
Configuration diagram 10-4
After removing the front drive shaft
Regarding vehicle movement... 10-4
Exploded configuration diagram ..... 10 — 5
Front drive shaft inspection 10-5
Front drive shaft disassembly and
Fixing points for assembly work... 10 - 6
front wheel bearing
Dust deflector No.2 replacement... 10-7
Dust cover and snap ring replacement 10-7
center bearing replacement 10-7
Rear drive shaft preparation 10-8
parts 10-8
rear drive shaft 10-9
脫掉Configuration Diagram 10-9
After removing the rear drive shaft
Regarding vehicle movement... 10-9
1G-FE.2L-TE equipped vehicle 10-10
Exploded configuration diagram 10-10 10
Rear drive shaft inspection ..... 10 — 10
Rear drive shaft disassembly and
Points to note during assembly work... 10-11
rear wheel bearing
Dust deflector No.1 replacement... 10 - 11
1JZ-GE, 1JZ-GTE, 2JZ-GE equipped vehicle 10-12
Exploded configuration diagram ..... 10 - 12
Rear drive shaft inspection ..... 10 - 12
Rear drive shaft disassembly 10 13
Rear drive shaft assembly 10-14
rear wheel bearing
Dust deflector No.1 replacement... 10-18

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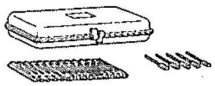
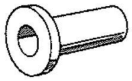
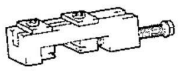
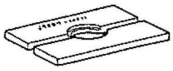
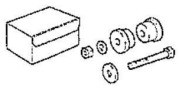
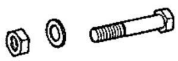
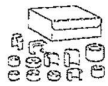
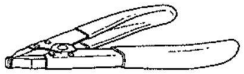
front drive shaft

supplies

SST

	09240-00020	wire gauge set	
	(09242-00080)	Wire gauge (0.8mm)	For measuring clamp crimping clearance
	09309-36010	Transmission rear bearing replacer	For installing front wheel bearing dust deflector No.2
	09316-20011	Transfer Bearing Ribracer	For installing front wheel bearing dust deflector No.2
	09521-24010	Clamp tool	For clamp caulking
	09527-10011	Rear axle shaft bearing remover	For center bearing removal
	09608-16042	Front hub bearing adjusting tool set	
	(09608-02021)	Bolts & Nuts	For temporary fixing of front axle bearing
	(09608-02041)	Retainer	For temporary fixing of front axle bearing
	09710-30021	Suspension bushing tool set	
	(09710-03141)	Lateral rod bushing removable base	For center bearing installation
	09905-00012	Snap ring No.1 expander	Snap ring removal and removal

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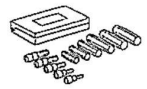
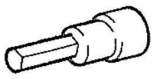
tool

	09040-00010 hexagon wrench set	
	(09043-20050) socket hexagon wrench 5	Stabilizer link removal and removal
Socket wrench (30mm) 10102		Front axle hub set nut removal and removal

soup bowl

Torque wrench [69~412N· m(700~4200kgf· cm)] 20121	For lock nut installation

Oils and fats Others

Toyota genuine hypoid gear oil SX 30709	Inboard joint sliding surface coating and Freon [For differential oil injection]
Vinyl tape 53702	For spline protection

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Congratulations times

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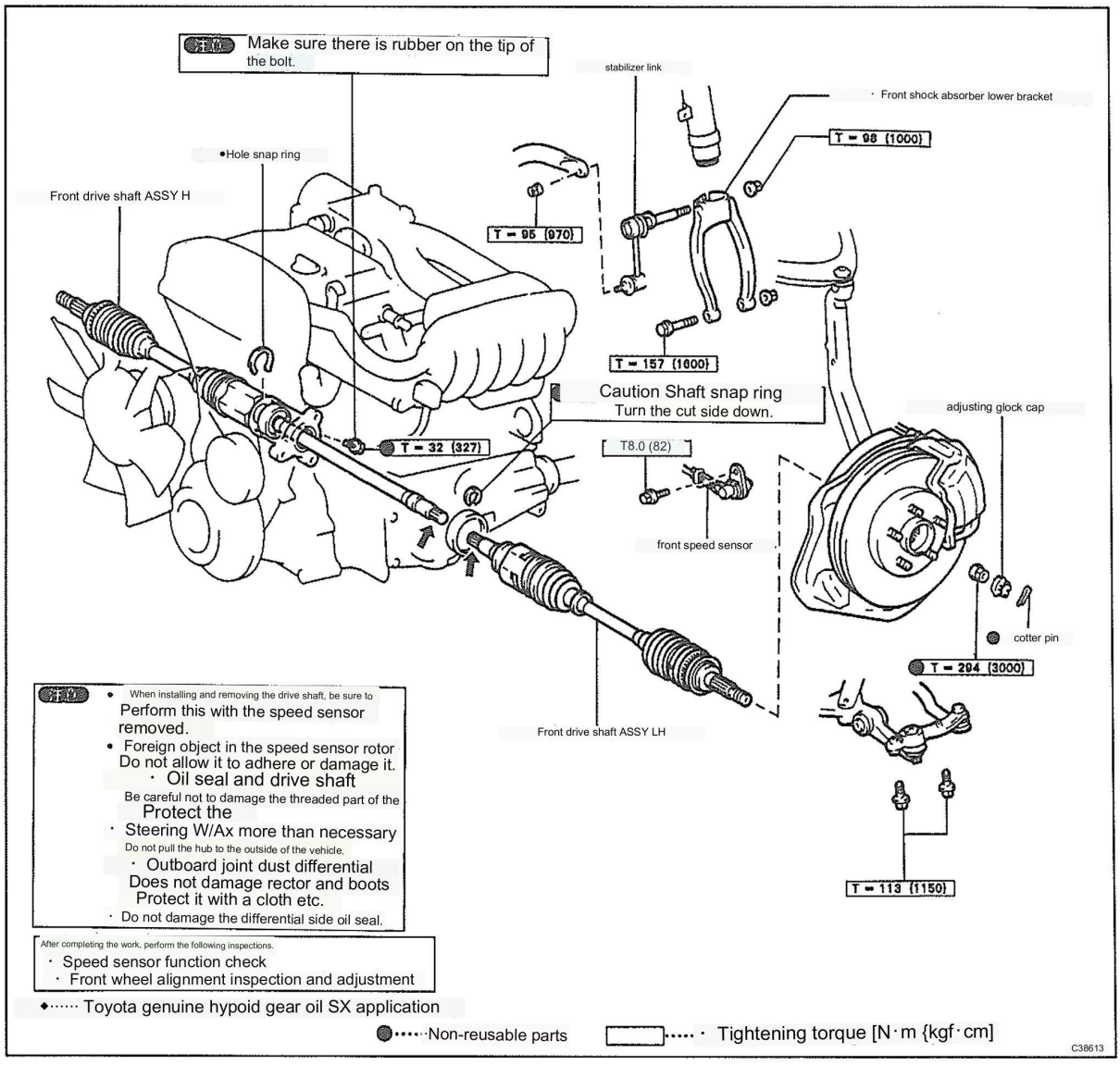
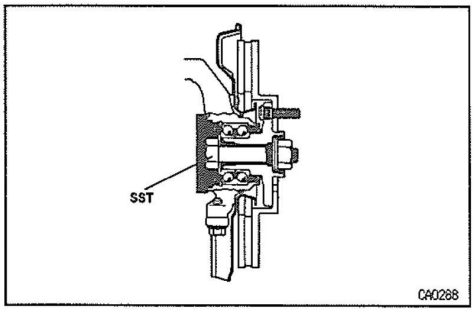
T0043878

front drive shaft

Detachment configuration diagram





front drive shaft

About moving the vehicle after removal

1 Axle hub fixed

(1) If it is unavoidable due to vehicle movement, etc., use SST to access

Temporarily fix the bearing.

SST	09608-02021	09608-02041

Do not apply vehicle load to the axle bearing with the drive shaft ASSY removed.

Hui family times
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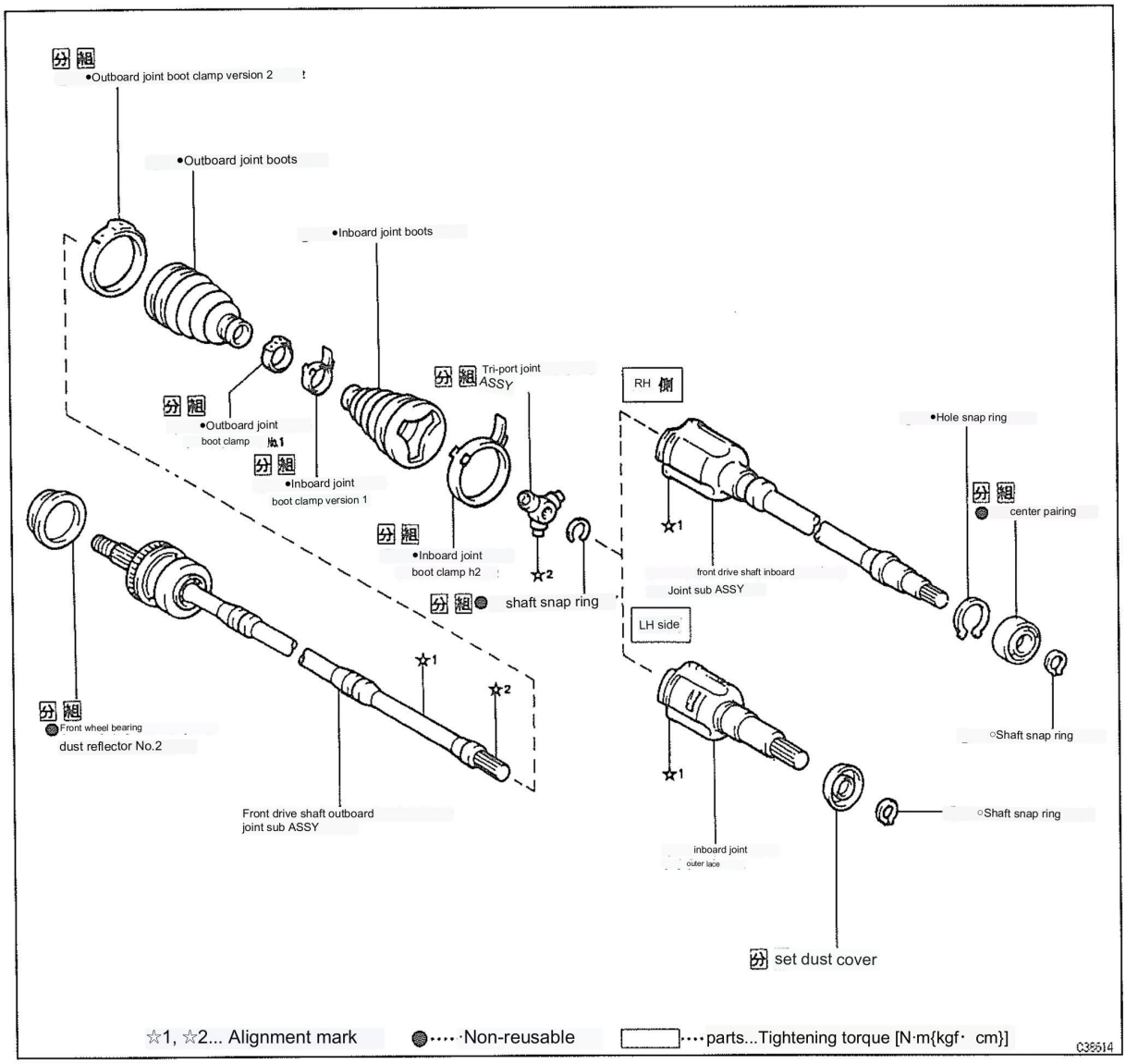
Exploded configuration diagram

注意 Do not make alignment marks with a punch.



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Front drive shaft inspection

1 Drive shaft ASSY inspection

(1) Move the joint vertically, horizontally, and axially to confirm that there is no smooth operation or significant play. Also, cracked boots Check that there are no grease leaks.

Caution
- Be sure to inspect the drive shaft before disassembling and after reassembling it.
- Carry the drive shaft horizontally.

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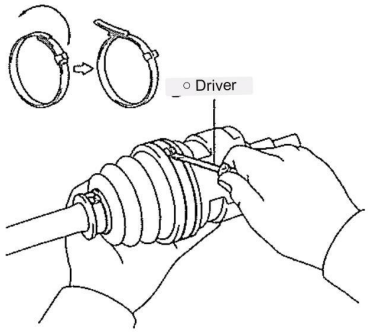
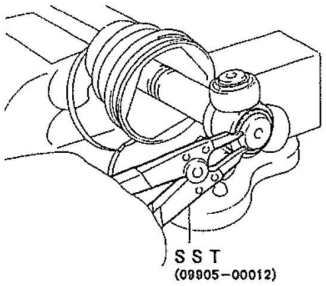
Front drive shaft disassembly and assembly

Points to note during work

1.Remove boot clamp (inboard side)



2. Shaft snap ring removal

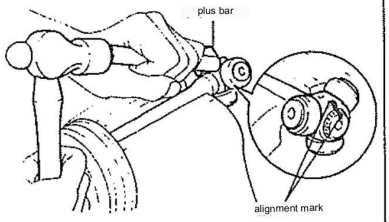


3. Tri-port joint removal

- Do not hit the roller part.
- Check
- Assemble according to the alignment marks.

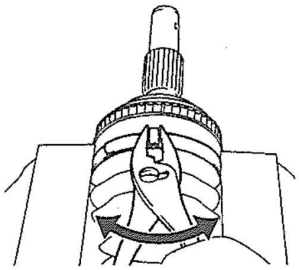
the side where the serrations are cut to the joint end face on the inside and assemble it.
- Make sure that the roller does not come off.

of the vehicle.



4. Removing the boot clamp (outboard side)

(1) Grasp the caulked part with pliers, Pry left and right to raise the clamp. Cut.



Five. boot installation

- Assemble the boots so that they are not twisted.
- Wrap protective tape around the spline to prevent boot damage.

Ku.

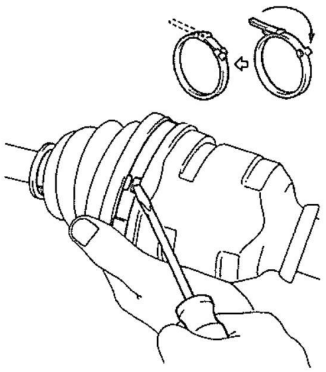
Inboard side and outboard side

Do not make a mistake as the type of grease is different depending on the side.

<Reference> Grease amount

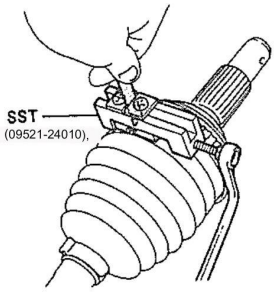
Inboard side	145~165g
Outboard side	105~125g

6. Boot clamp caulking (inboard side)



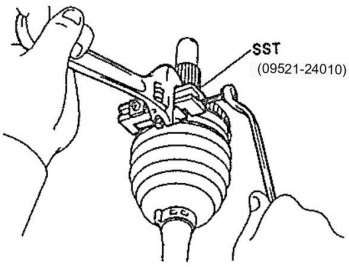
7. Caulk the boot clamp (outboard side) (1)

Tighten the SST slightly while pressing it against the boot.

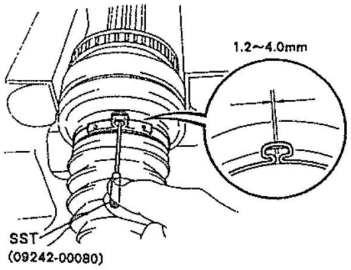


<Mura> Insert a 2mm thick piece of SST into the position shown in the figure.

(2) Fix the SST with an adjustable wrench and tighten until there is no gap.
(Note: Do not over tighten the clamp.



(3) Measure the clearance, and if it is outside the standard value, caulk it again to bring it within the standard value.



- Apply grease to the outer lace mating part of the boot. do not have.

-Does not damage boots.

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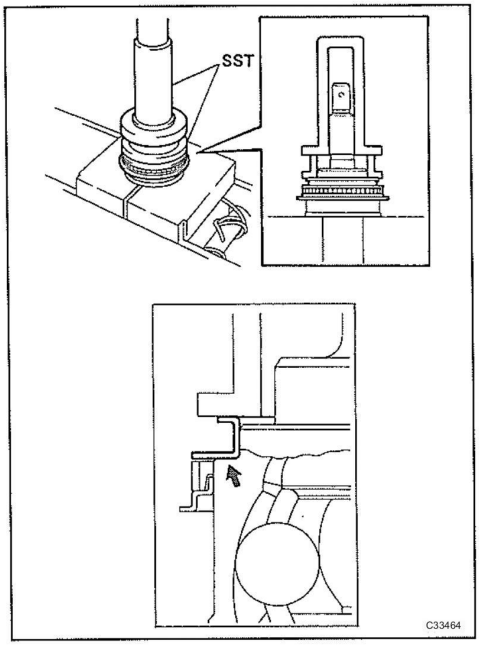


front wheel bearing

Dust deflector No.2 replacement

1 Front wheel bearing dust deflector No. 2 replacement

(1) Fix the outboard joint shaft ASSY to the vise via the aluminum plate.

注意 Do not tighten the vise too tightly.

(2) Using a screwdriver and hammer, remove front wheel bearing dust deflector No. 2. Speed

注意 sensor rotor and dust differential inside the rotor

Do not damage or remove the rector.

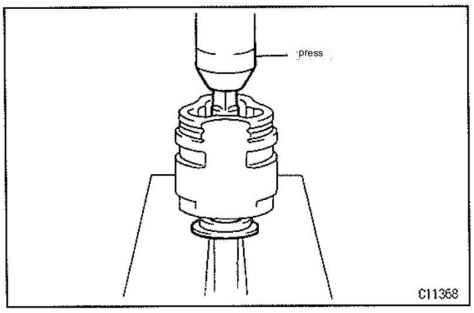
(3) Using SST and press, new front wheel bearing

Press in the dust deflector No.2. S ST

09309-36010 09316-20011

Note: · Do not damage the speed sensor rotor.· Dust deflector No. 2 should be placed on the outer race end face (← marked part). · Press it in so that it fits tightly.

Dust deflector No. 2 should not be deformed when press-fitting.



Dust cover and snap ring replacement

1 Dust cover replacement

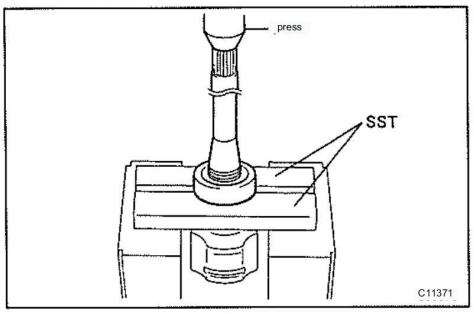
(1) ⊖ Remove the dust cover using a screwdriver and hammer.

注意 Do not tighten the vise too tightly.

(2) Assemble the new dust cover using a press.

2 Replacing the snap ring (1) Use a thin blade screwdriver to remove the snap ring.

(2) Assemble a new snap ring.



center bearing replacement

1 Center bearing removal

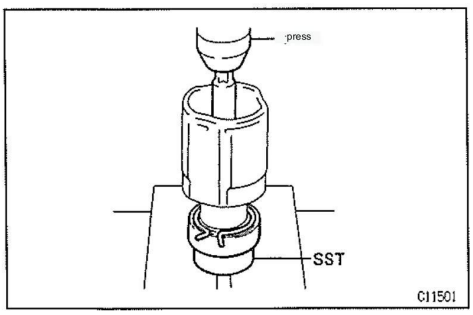
(1) Using SST, remove the snap ring.

SST 09905-00012

(2) Using SST and a press, attach the bearing to the drive shaft.

Remove it from the inboard joint.

SST 09527-10011



2 Center bearing assembly

(1) Use SST and press to attach the bearing to the drive shaft

Press fit into the inboard joint.

S S T 09710-03141

(2) Install a new snap ring using SST.

S S T 09905-00012

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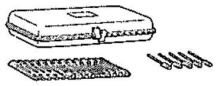
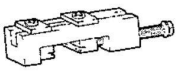
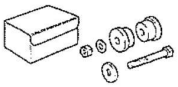
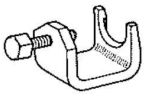
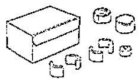
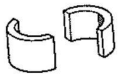
T00486425

rear drive shaft

supplies

S S T

	09240-00020	Wire gauge set	
Wire gauge (0.8mm) 09242-00080		70059	For measuring clamp crimping clearance (vehicles equipped with 1JZ-GTE, 2JZ-GE)
	09521-24010	Clamp tool	For clamp caulking (vehicles equipped with 1JZ-GTE, 2JZ-GE)
	09608-16042	Front hub bearing adjusting tool set	
Bolt & Nut 09608-02021		70255	Rear axle bearing temporary fixation
	09628-10011	ball joint puller	For strut rod separation (vehicles equipped with 1JZ-GE, 1JZ-GTE, 2JZ-GE)
	09726-12023	Lower suspension arm bush remover & Ribracer	
	(09726-01031)	Spacer	Cross group joint sub ASSY removal For sushi (1JZ-GE, 1JZ-GTE, 2JZ-GE equipped vehicle)
Snap ring No 1 09905-00012	expander	70259	Snap ring removal and removal

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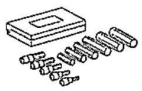
tool

	09040-00010	Hexagon wrench set	
socket hexagon wrench 8 09043-20080		70025	Drive shaft head cap bolt removal and removal (1JZ-GE equipped vehicle)
Socket hexagon wrench 10 09043-20100		70026	Removal and removal of drive shaft head cap bolts (vehicles equipped with 1JZ-GTE, 2JZ-GE)
Socket wrench (32mm)		10103	For lock nut removal

Oils and fats Others

ThreeBond 1121 (manufactured by ThreeBond)	53304	For installing inboard joint cover (Vehicles equipped with 1JZ-GE, 1JZ-GTE
wire	52015	2JZ-GE) For hanging exhaust pipe

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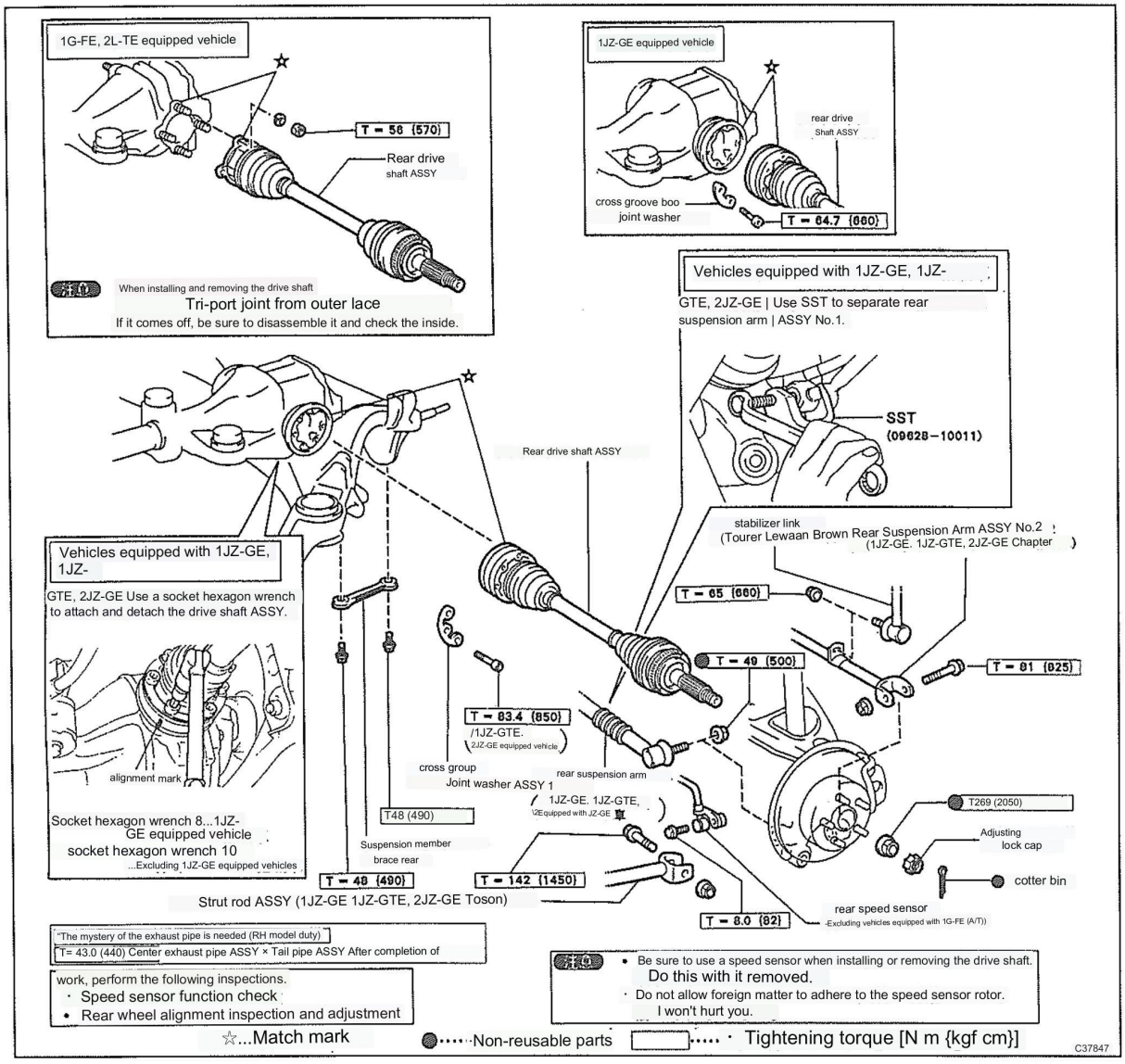
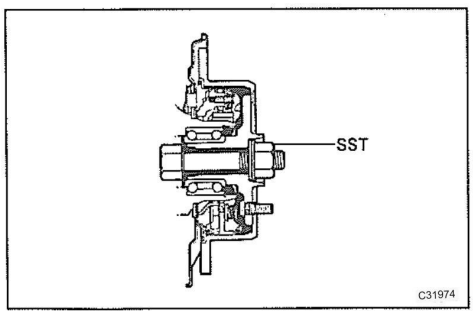
Y0048426

Rear drive shaft

Detachment configuration diagram





rear drive shaft

About moving the vehicle after removal

1 axle hub fixed

(1) If it is unavoidable due to vehicle movement, use SST to fix the axle bearing. SST

09608-02021 09608-02041 Do not apply vehicle load to the axle bearing with the drive shaft ASSY removed.

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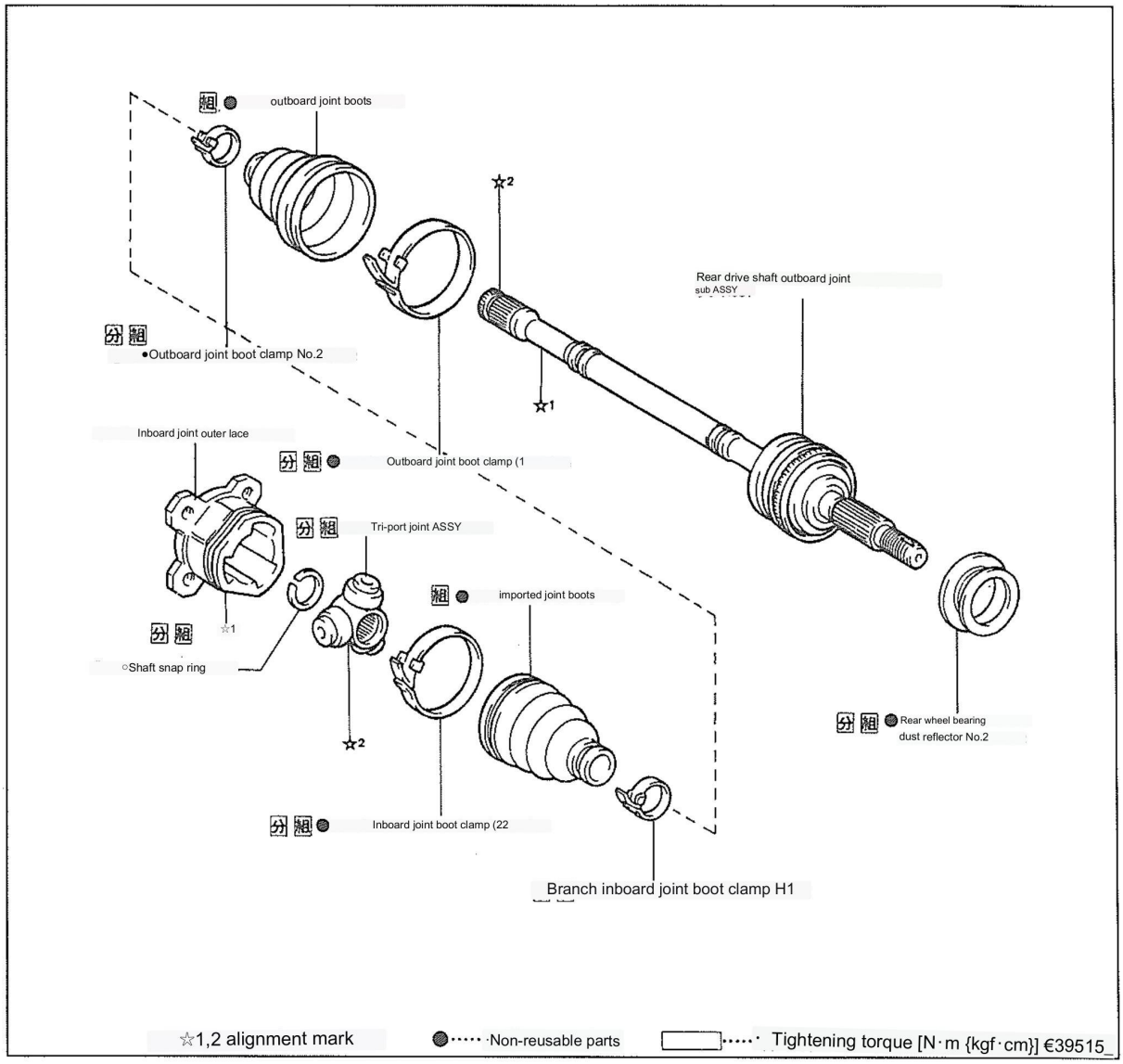
1G-FE,2L-TE equipped vehicle

Exploded configuration diagram

Note Do not make alignment marks with a punch.



☆1,2 alignment mark ····· Non-reusable parts ····· Tightening torque [N·m {kgf·cm}] €39515_

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Rear drive shaft inspection

1 Drive shaft ASSY inspection

(1) Move the joint vertically, horizontally, and axially to confirm that there is no smooth operation or significant play. Also, the color of the boots, damage . Check that there are no grease leaks.

[Drink with] ·caution - Be sure to inspect the drive shaft before disassembling it and after reassembling it.

· Carry the drive shaft horizontally.

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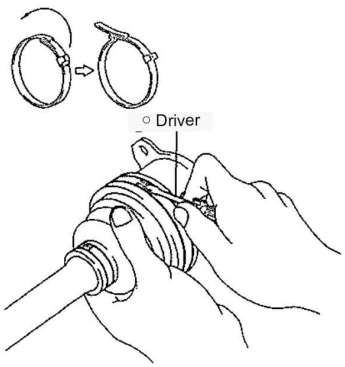
Rear drive shaft disassembly and assembly

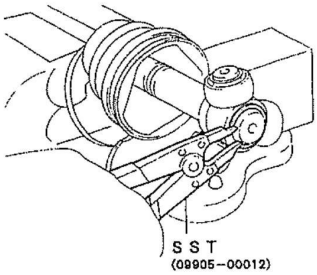
Points to note during work

• When assembling and storing inboard joint boots and inboard joint outer laces, ensure that the joint angle is 20°C or less.· If the joint comes off from the outer race, disassemble it again, check that no rollers have come loose, and then reassemble. If the roller has completely come off, replace it at the drive shaft ASSY. - If force is applied to the rollers while the tripod joint ASSY is in place, the rollers may fall off.

1. Removing the boot clamp



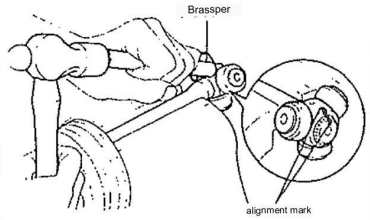
2. Shaft snap ring removal



3. Tri-port joint removal and removal Do not hit the GD/roller part.

• Assemble according to the alignment marks.·

Assemble the joint with the side where the serrations are cut toward the inside of the vehicle.· Check that the rollers do not come off.



4. Boot installation

Caution: Assemble the boots so that they are not twisted.

· Outboard joint shaft to prevent scratches on boots Wrap protective tape around the spline part of the ASSY.

*The types of grease are different for the inboard side and outboard side, so do not mix them up.

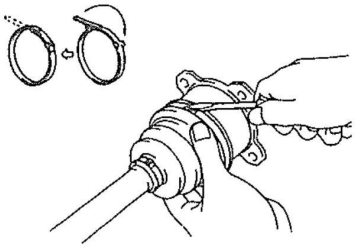
<Consideration> Grease amount

Inboard side	180 ~ 190g
Outboard side	107 117g

5. Boot clamp caulking Do

• not allow grease to adhere to the outer lace mating groove of the boot.

-Does not damage boots.



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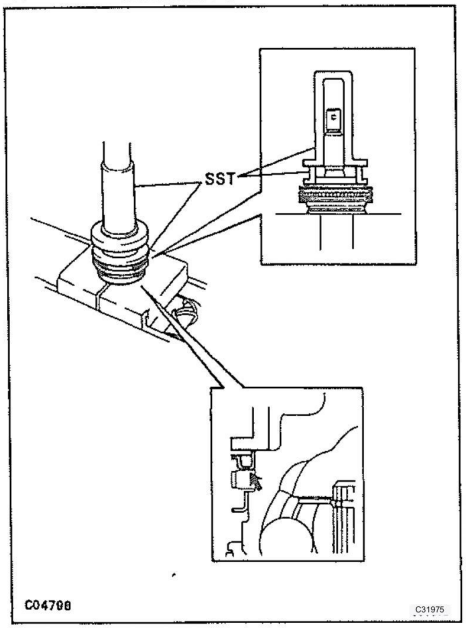

Rear wheel bearing dust deflector No.1 replacement 1

Rear Wheel Bearing Dust Deflector No.1 Replacement

(1) Fix the outboard joint shaft ASSY to the vise via the aluminum plate. Do not tighten the vise too tightly.

(2) Using a screwdriver and hammer, remove rear wheel bearing dust deflector No.1.

Speed sensor rotor and dust differential inside the rotor Do not damage or remove the rector.

(3) Using SST and press, new rear wheel bearing Assemble dust deflector No.1.

S S T 09309-36010 09316-20011

· Do not damage the speed sensor rotor.

· Press-fit the dust deflector M1 so that it tightly contacts the end face of the outer race (marked UPLO · Do not deform rear wheel bearing dust deflector No. 1 when press-fitting.

Congratulations
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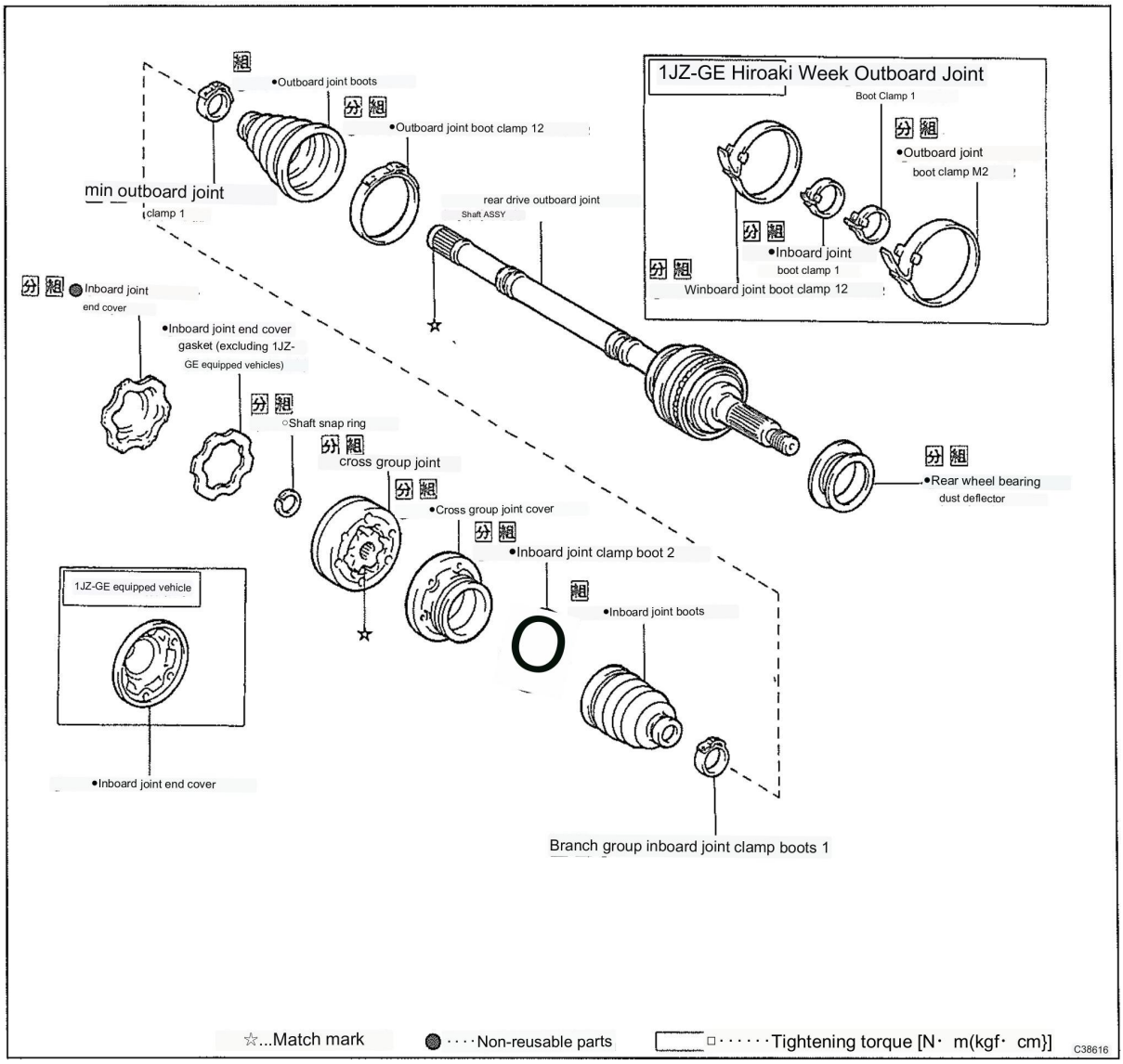
Vehicles equipped with 1JZ-GE, 1JZ-GTE, 2JZ-GE

Exploded configuration diagram

G. 注意 Do not make alignment marks with a punch.



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Rear drive shaft inspection

1 Drive shaft ASSY inspection

(1) Move the joint vertically, horizontally, and axially to confirm that there is no smooth operation or significant play. Also check that the boots are free from cracks, damage, TENT UPLO and grease leaks. Be sure to inspect the drive shaft before disassembling and after reassembling it.

注意

- Carry the drive shaft horizontally.

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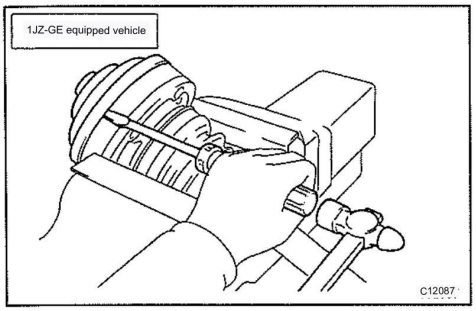


Rear drive shaft disassembly

1 Remove the inboard joint end cover (1)

Fix the cross group joint to the vise via the aluminum plate.

do.

注意 Tightening the joint too strongly in a vise may cause damage, so tighten it just enough to secure the joint.

(2) Remove the end cover using a screwdriver. Do

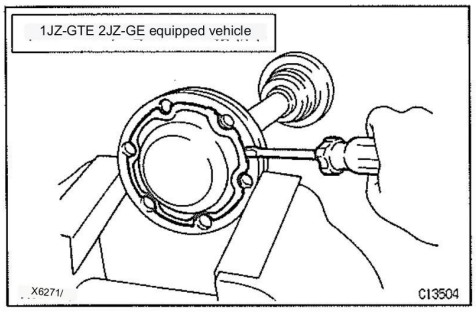
注意 not apply excessive force to the outboard joints.

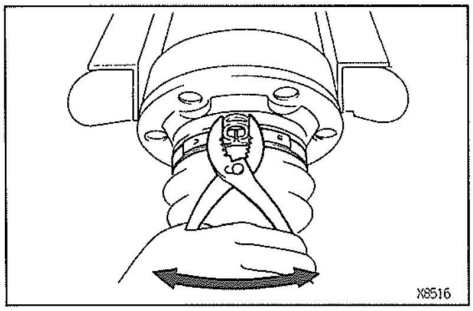
(3) Drive shaft head cap to prevent joint from falling off

Attach the bolt and washer to the joint and tighten with the nut.

Fix it.

<Reference> Use a nut with a nominal diameter of 12 mm and a pitch of 1.25 mm.





2 Remove boot clamp

(1) Use a screwdriver to remove the four clamps. (Vehicles equipped with 1JZ-GE) (2) Grasp the caulked parts of the four clamps with pliers and pry them to the left and right.

て Raise the clamp and cut. (1JZ-GTE 2JZ-GE equipped vehicle)

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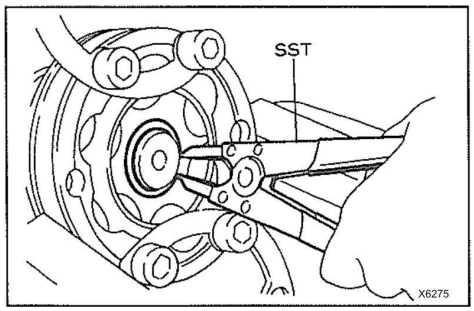


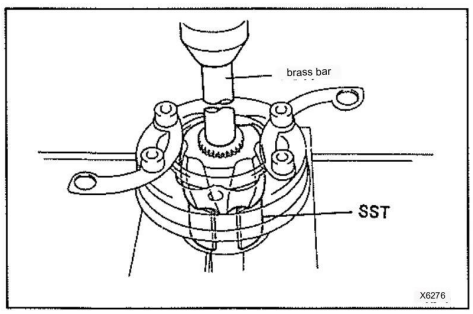
3 Cross groove joint removal

(1) Place alignment marks on the shaft and cross group joint.

(2) Using SST, remove the shaft snap ring. SST

09905-00012

Caution Do not make alignment marks with a punch.



(3) Using SST and a press, remove the cross groove joint sub ASSY via the brass bar. SST

09726-01031

(4) Remove the bolt and washer to prevent the joint from falling off.

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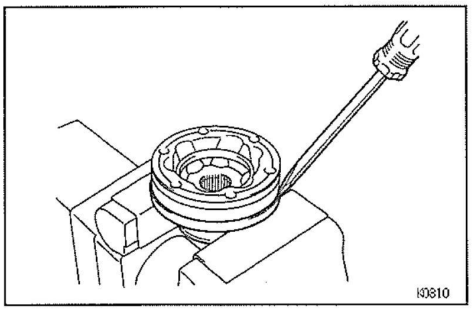
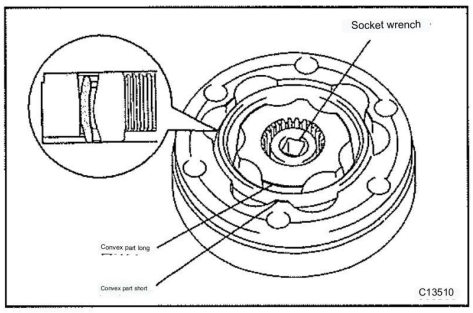


(5) Fix the boot attachment part of the cross group joint cover in a vise.

(6) Using a screwdriver, remove all the cross 周groove joint covers.

(7) Remove the joint by prying the mating surfaces of the cross groove joint and cover with a screwdriver, etc.

•Caution To prevent the ball from falling off, hold the inner race and outer race of the cross group joint when removing it.



Rear drive shaft assembly

1 Cross group joint (only when disassembled) Assembly

1JZ-GE equipped vehicle

(1) If the joint part has been disassembled, reassemble it by following the steps below.

Find it.

① Turn the smaller outer lace side upward.

② Place the larger chamfer on the inside of the cage facing upward. ③ Place the serrations up to the end of the inner lace.

Turn to the side.

④ Align the long part of the convex part of the inner lace with the short part of the convex part of the outer lace.

⑤ Place the socket wrench inside the inner race to prevent the ball from falling off.

Put it in.

⑥ Lift up the cage and place 6 balls into the cage.

⑦ Check that the joint slides smoothly.

⑧ While lifting the cage, lift the outer race until the ball is just about to fall, align the ball and inner race groove, and assemble the joint.

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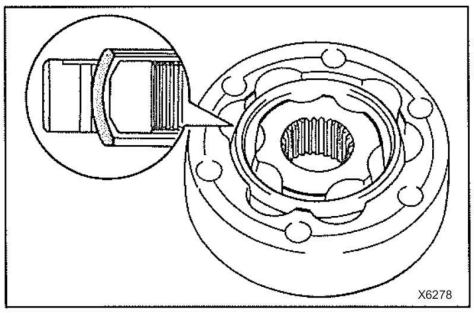

1JZ-GTE 2JZ-GE equipped vehicle

(1) If the joint has been disassembled, reassemble it by following the steps below.

Find it.

① Turn the concave inside of the outer lace upward.

② The larger chamfer on the inside of the gauge faces upward. ③ Place the side where the serrations are cut to the end of the inner lace upwards.

Turn to the side.

④ Align the long part of the convex part of the inner lace with the short part of the convex part of the outer lace.

⑤ Tilt the inner race and gauge and assemble the 6 balls.

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⑥ Check that the joint slides smoothly.

Congratulations times
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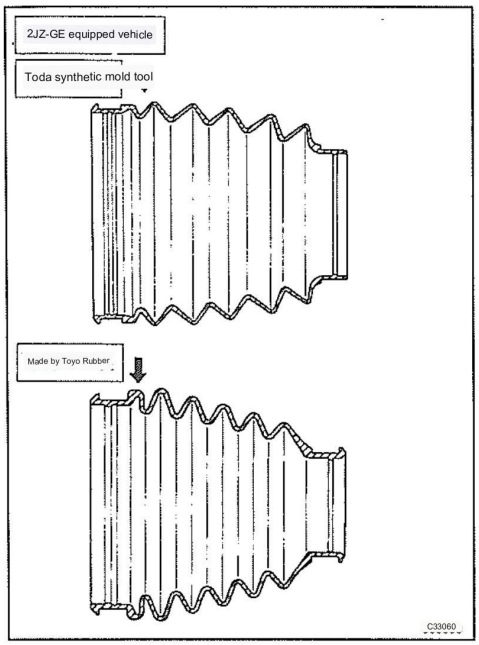


2 Assembling outboard and inboard joint boots -

注意 Select outboard joint and inboard joint boots from the same manufacturer and assemble them. 4 · spline part of the drive shaft may damage the boots. Wrap with protective tape.

(reference) •Outboard joint side and inboard joint side are the same Using boots and clamps.

(Vehicles equipped with 1JZ-GTE, 2JZ-GE)

· Distinguish the manufacturer of the boots by the part indicated by the arrow. (1) Fill the outboard joint with grease.

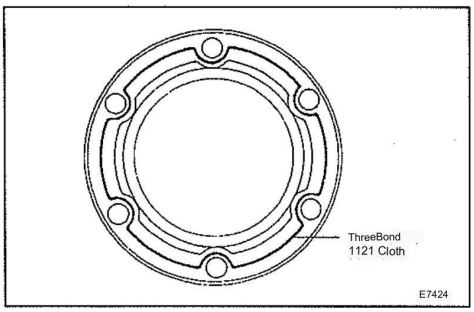
注意 Do not allow grease to adhere to the joint fitting parts of the boots.

<Reference> Grease amount 120~130g (vehicles equipped with 1JZ-GE) 220~230g

(1JZ-GTE, 2JZ-GE equipped vehicle manufactured by Toyoda Gosei) 205~215g

(1JZ-GTE 2JZ-GE equipped vehicle manufactured by Toyo Rubber)

(2) Securely fit the large diameter side of the boot into the outboard joint, and securely assemble the small diameter side into the mating part of the shaft.



3 Cross groove joint cover assembly

(1) Remove oil and fat from the mating surfaces of the cover and joint.

(2) Apply Three Bond 1121 to the position shown in the figure on the new joint cover with a thickness of 1.0 to 1.8 mm, making sure not to break the coating.

注意 After applying ThreeBond 1121, do not allow dirt to adhere to it.

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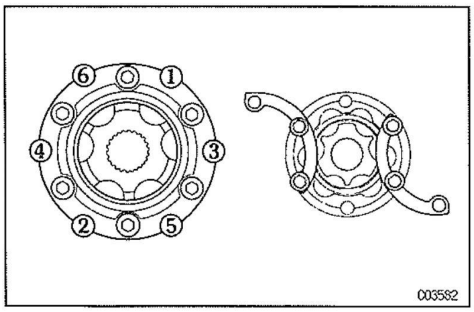
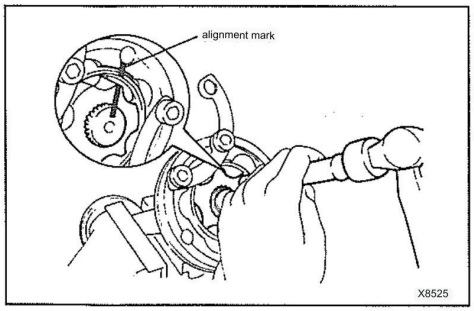


(3) Turn the inside plane of the cross group joint upward. (4) Pass the bolts through the cover and joint, and align the bolt holes.

(5) Using a brass spar, cut the end face of the joint cover in the order shown in the figure. Type in several times.

(6) Holding the inner race and outer race, turn the cross group joint upside down.

(7) To prevent the joint from falling off, use drive shaft head cap bolts and washers to secure with nuts.



4 Cross groove joint assembly

(1) Align the alignment marks on the shaft and joint. (2) Using a brass bar and hammer, joint on the shaft Type in.

注意 Be sure to hit the brass bar against the inner lace.

Congratulations
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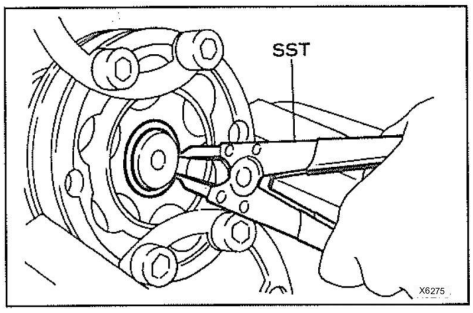


(3) Assemble a new shaft snap ring using SST. SST

09905-00012

(4) Fill the cross group joint with grease. Caution - Do

(not) apply grease to the joint fitting part of the boot. - Fill the ball

,sliding surface inside the joint with grease so that it is sufficiently

distributed.

<Reference> Grease amount 103g (1JZ-GE equipped vehicle)

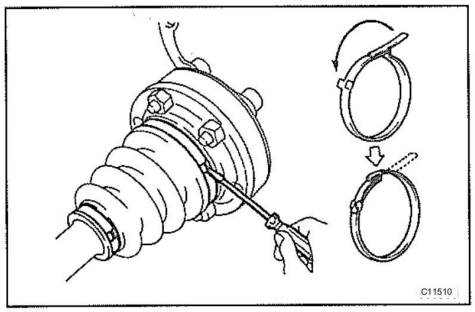
100g (vehicles equipped with 1JZ-GTE, 2JZ-GE)

(5) Insert the large diameter side of the boot fully into the inboard

and securely attach the small diameter side to the shaft

joint mating part. Outboard and inboard joint boot clamp assembly

Found

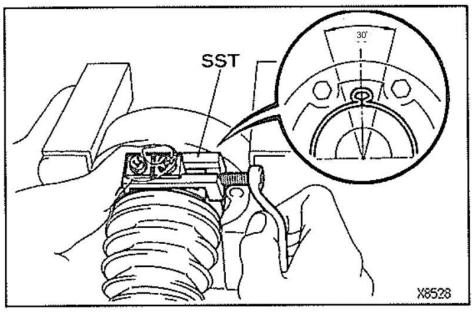


1JZ-GE equipped vehicle

【Note】 ・ Do not allow grease to adhere to the mating groove of the boot.

・ Assemble the boots properly without twisting.

〈参考〉 ○Use a screwdriver to bend (crimp) the clamp as shown.



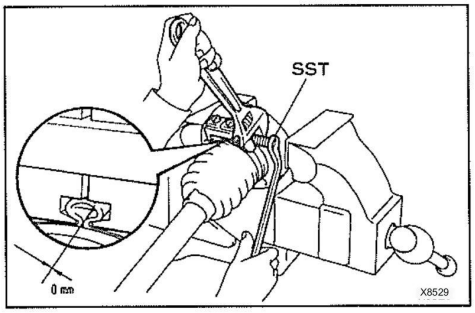
1JZ-GTE, 2JZ-GE equipped vehicle

(1) Attach the SST to the clamp and slightly tighten the SST while pressing it against the boot.

SST 09521-24010 Caution

Caution The large diameter side clamp of the inboard joint should be caulked at the position shown in the diagram.

Ru.

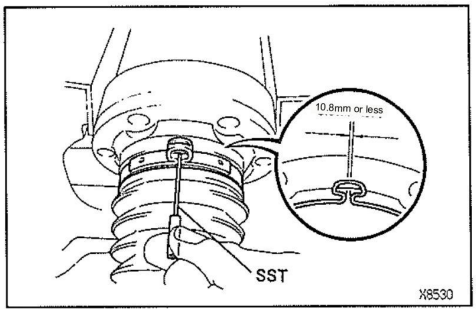


(2) Fix the SST with an adjustable wrench and adjust the clamp position.

Caulk until there is no gap left.

SST 09521-24010

注意 Do not overtighten the clamp.



(3) Use SST to measure the clearance of the clamp shown in the figure.

S S T 09240-00020

Standard clearance 0.8mm

注意 or less If it exceeds the standard value, use SST (09521-24010) to caulk it again and measure the clearance to bring it within the standard value.

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steamed noodles
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6 Inboard joint end cover assembly

1JZ-GE equipped vehicle

(1) Drive shaft head cap bolt and washer to prevent it from falling off.

Remove the shear and nut.

(2) Fill the inboard joint end cover with grease.

<Reference> Grease

amount 30g (3) Inboard joint end cover and inboard joint

Remove fat and oil from mating surfaces.

(4) Apply paint to the position shown in the figure on the new joint cover with a thickness of Ø 1.0~1.8mm.

Apply ThreeBond 1121 so that there are no cuts.

注意 After applying ThreeBond 1121, do not allow dirt to adhere

to it. (5) Attach the inboard joint end cover to the inboard joint

Assemble it according to the root hole.

(6) From the end cover side, install the six drive

shaft head cap bolts using washers.

(7) Attach the 6 nuts to the boot side and tighten them several times in diagonal order.

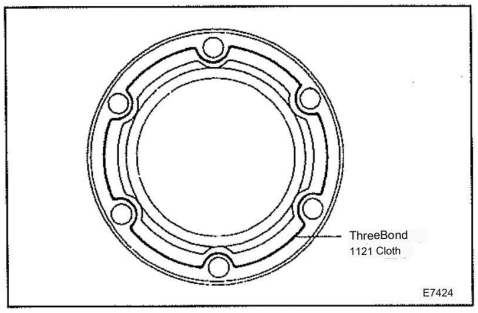
Divide and tighten.

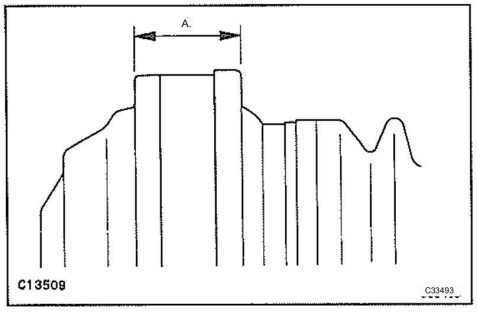
(8)(5)Remove the six bolts installed. (9) Make

sure that the end cover is firmly press-fitted within the standard value (A).

admit.

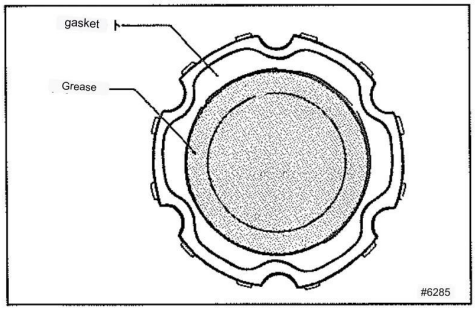
Standard height 36.3mm or less





10

1JZ-GTE, 2JZ-GE equipped vehicle



(1) Drive shaft head cap bolt and washer to prevent it from falling off.

Remove the shear and nut.

(2) Attach a new gasket to the new end cover.

(3) Fill the end cover with grease.

注意 Do not allow grease or dirt to adhere to the gasket.

<Reference> Grease amount 50g

(4) Align the bolt holes and attach the end cover to the inboard joint.

Attach.

注意 Apply grease to the gasket mating surface of the inboard joint.

Do not allow dirt to adhere to the surface.

(5) From the end cover side, insert the drive shaft through the washer.

Install the 6 head cap bolts. (6) Attach

6 nuts to the boot side and tighten them several times in

Divide and tighten.

(7) Remove the six bolts installed in (5). (8)

Make sure the end cover tab hits the inboard joint.

Check.

diagonal order UPLOADED BY Ruko
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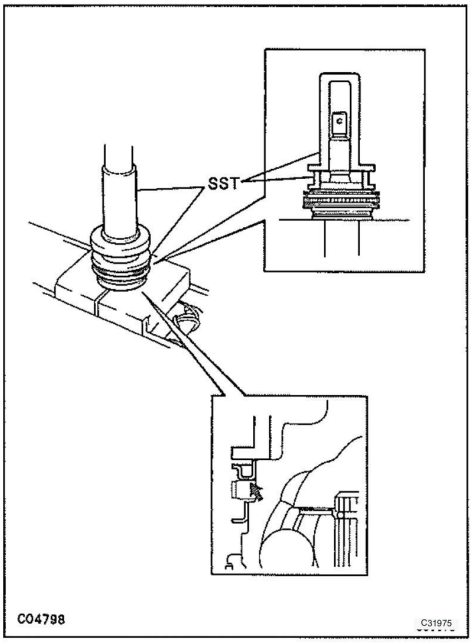

Rear wheel bearing dust deflector No.1 replacement

1 Rear wheel bearing dust deflector No.1 replacement

(1) Connect the outboard joint shaft ASSY through the aluminum plate.

Fix it in a vise.

"Note Do not tighten the vise too tightly.

(2) Using a screwdriver and hammer, remove the rear wheel bearing.

Remove dust deflector No.1. Speed

注意 sensor rotor and dust differential inside the rotor

Do not damage or remove the rector.

(3) Using SST and press, new rear wheel bearing

Assemble dust deflector No.1.

S S T 09309-36010 09316-20011

Caution
- Do not damage the speed sensor rotor.
- Press-fit dust deflector No. 1 so that it tightly contacts the end face of the outer race (← marked part).
- When press-fitting, insert rear wheel bearing dust deflector No.1 Do not deform.

10

Congratulations times
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11 Differential

Basic inspection ····· 11 — 2
Preparation ····· items 11-2
Differential oil level check ····· 11-2
differential oil ····· 11-2
front drive pinion
Oil seal...11-3
Front side gear shaft
Oil seal... 11 - 3
front differential
Carrier ASSY... 11-4
preparations, ····· 11 — 4
Front differential carrier ASSY ... 11 - 9
Deblue configuration diagram ····· 11-9
Front differential carrier ASSY
Points to note during attachment/detachment work... 11-10
Exploded configuration diagram ····· 11 — 11
cross section ····· 11 - 12
Front differential carrier ASSY inspection 11-13
Front differential carrier ASSY disassembly... 11-13
Front differential components
Inspection and adjustment 11-16
front differential
Carrier ASSY assembly... 11 - 17
rear drive pinion
Oil seal... 11-25
supplies ····· 11 — 25
Rear drive pinion oil seal 11 27
Deconfiguration diagram ····· 11-27
Rear drive binion oil seal
Points to note when installing and removing work... 11 27
rear side gear shaft
Oil seal...11-30
supplies ····· 11-30
Rear side gear shaft oil seal 11 ····· - 31
Demolition configuration diagram ····· 11 - 31
Rear side gear shaft oil seal
Points to note when attaching and detaching work... 11-32
rear differential
Carrier ASSY... 11-34
supplies ····· 11 - 34
Rear differential carrier ASSY..... 11 39
Removal configuration ····· diagram 11-39
Rear differential carrier ASSY
Points to note when attaching and detaching... 11-40
Exploded configuration diagram ····· 11 — 41
cross section ····· ..... 11 - 45
Rear differential carrier ASSY
Inspection (all ··· cars) 11-47
Rear differential carrier ASSY
Disassembly (all cars) -11-48
Rear differential components
Inspection and adjustment... 11-50
Rear differential carrier ASSY assembly... 11-52
differential mount
cushion 1168
Prepared items. ····· 11 — 68
Differential mount cushion 11-69
differential mount cushion
Removal... 1169
Differential mount cushion installation 11 69

11

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T0048554

Basic inspection

supplies

Oils and fats Others

Toyota genuine hypoid gear oil SX	30709	For front and rear differential (excluding 2-pinion LSD) injection
Toyota genuine hypoid gear oil LSD	307:1	For rear differential (2 pinion LSD) injection

T0048885

Differential oil level check

differential oil

1 Oil level check

注意 - Too much or too little oil can cause trouble.

Stop the vehicle on a flat road.

(1) Remove the filler plug.

(2) Make sure that there is oil within 0~5mm from the bottom edge of the filler plug hole.

confirm.

G 注意 When changing the oil, recheck the oil level after driving. (3) Check for oil leaks when the oil level is low.

Reference value

	Amount of oil used	Used oil
front	0.7 ℓ	Hypoid gear oil SX
rear 7.5 inch	1.0 ℓ	Hypoid gear oil SX
rear 7.5 inch 2 pinion LSD	1.00	Hypoid gear oil LSD
rear 8 inch	1.30	Hypoid gear oil SX
rear 8 inch Torsen LSD	1.3ℓ	Hypoid gear oil SX

11

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T0049253

front drive pinion

Oil seal

注意 Front drive vinion oil seal replacement is not available above, so the front differential carrier ASSY Do it after lowering the vehicle.

("Front Differential Caliya ASSY"-"Front See Differency Caliya ASSY decomposition and assembly ")

10040254

Front side gear shaft

Oil seal

注意 Since the front side gear shaft oil seal is not available above, it is performed after lowering from the front 左deferrusional carrier ASSY vehicle.

(Refer to "Front Differential Carrier ASSY" - "Front Differial Caliya ASSY decomposition and assembly")

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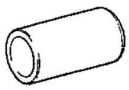
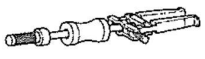
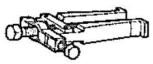
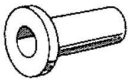
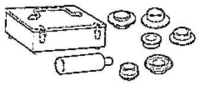
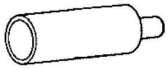
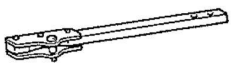
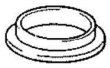
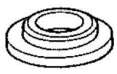
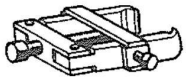
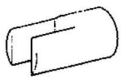
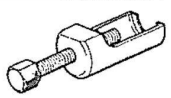
T0049255

front differential

Carrier ASSY

Preparation product

SST

	09223-00010	Cover & Seal Replacer	For installing side gear shaft oil seal
	09308-00010	oil seal puller	For side gear shaft oil seal removal
	09308-10010	oil seal puller	For removing drive pinion oil seal
	09309-36010	Transmission rear bearing rib racer	For installing drive pinion oil seal
	09316-60011	Transmission & Transfer Bearing Replacer	
	(09316-00011)	Replacer pipe	Companion flange dust deflector removal For attachment
	09330-00021	Companion flange holding tool	For companion flange retention
	09502-12010	differential bearing replacer	For removing the drive pinion rear bearing outer race and installing the drive pinion oil seal.
	09506-30012	Differential drive pinion rear bearing cone replacer	Drive pinion front bearing installation for
	09556-22010	Drive binion front bearing remover	For removing drive pinion rear bearing
	09564-32011	differential preload adapter	For ring gear backlash measurement
	09610-20012	bitman arm blur	For tearing off tie rod ends

11

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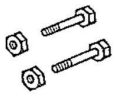
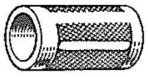
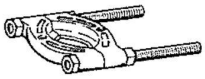
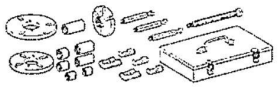
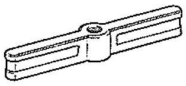
	09612-65014	steering worm bearing blur	
	(09612-01020)	Crow B	For removing drive pinion rear bearing outer race
	(09612-01050)	Hanger pin with nut	For removing drive pinion rear bearing outer race
	09636-20010	Upper ball joint dust cover rib racer	For installing tapered roller bearings (side bearings)
	09950-00020	Bearing remover	Removing the drive pinion front bearing and drive pinion dust deflector for
	09950-30010	Blur A set	
	(09951-03010)	Upper plate	Companion flange removal/removal
	(09953-03010)	Center bolt	Companion flange removal/removal
	(09954-03010)	Arm	Companion flange removal/removal
	(09955-03030)	Lower plate 130	For holding and removing companion flange
	(09956-03020)	Adapter 18	Companion flange removal/removal
	09950-40010	Puller B set	
	(09951-04020)-	Hanger 200	Tapered roller bearing (side bearing) for removal
	(09952-04010)	Slide arm	Tapered roller bearing (side pairing) for removal

11

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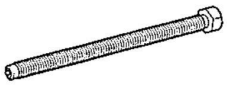
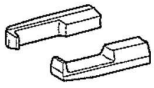
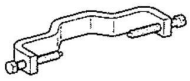
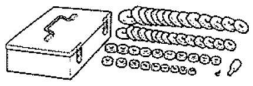
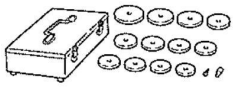
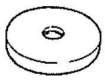
	(09953-04030)	center bolt 200 *	Tapered roller bearing (side bearing) for removal
	(09954-04010)	arm 25	Tapered roller bearing (side bearing) for removal
	(09955-04060)	Crow No.6	Tapered roller bearing (side bearing) for removal
	(09957-04010)	Attachment	Tapered roller bearing (side bearing) for removal
	(09958-04010)	Holder	Tapered roller bearing (side bearing) for removal
	09950-60010	Replacer set	
	(09951-00390)	Replacer 39	Tapered roller bearing (side bearing) for removal
	Replacer 41 09951-00410	70111	Tapered roller bearing (side bearing) (for assembly)
	Replacer 43 09951-00430	70113	Companion flange dust deflector removal For removal
	Replacer 54 09951-00540	70124	For side bearing outer race removal
	Replacer 64 09951-00640	70134	Drive pinion front outer race assembly For attachment
	09950-60020	Replacer set No.2	
	(09951-00710)	Ribracer 71	Drive pinion rear outer race assembly for
	Replacer 72 09951-00720	70138	Drive pinion rear outer race assembly for
	Replacer 73 09951-00730	70139	For side bearing outer race assembly
	Replacer 81 09951-00810	70144	Drive pinion front outer race assembly For attachment

11

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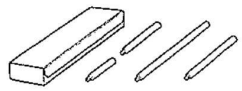
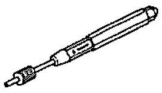
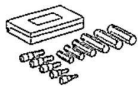
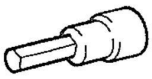
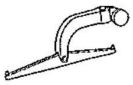
	09950-70010	Handle set	
	(09951-07150)	Handle 150	Side bearing outer race removal 用

tool

	09031-00040	Pin punch (Φ5mm)	For detachable straight pin
	09040-00010	Hexagon wrench set	
	(09043-20050)	Socket hexagon wrench 5	Stabilizer link removal and removal
Socket hexagon wrench 6 09043-20060		70024	For detaching the front propeller shaft
	09090-05001	differential repair stand	For fixing the differential carrier
Bolt (M12×P1.25 under neck length 186mm) 90101-12159		54611	For mounting drive binion front and rear bearing outer races.
Nut (M12×P1.25) 90179-12051		54612	For drive pinion front and rear bearing outer race installation
Bolt (M8×P1.25) under neck length 37~50mm		54620	For companion flange retention

11

soup bowl

	XY-1	Dial gauge lever type stylus Handled by Banzai Co., Ltd. Treated as Iyasaka Co., Ltd.	For ring gear backlash measurement
Dial gauge		21201	For measuring each part
Torque wrench [0~3N· m[0~30kgf· cm}]		20114	For preload measurement
Torque wrench [50~275N· m {500~2800kgf· cm}]		20119	For tightening the drive pinion nut

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Oils and fats Others

Toyota genuine MP grease No.2 30204	For application to oil seal lip
Toyota genuine hypoid gear oil SX 30709	For injection into the differential case
Toyota genuine hypoid gear oil LSD 30711	For applying to drive pinion threads
Komyotan 52801	Inspection of tooth contact between ring gear and drive pinion for
heater 51901	For ring gear heating
Seal packing 1281 50901	For application of differential carrier cover
Vinyl tape 53702	[For SST fixation]

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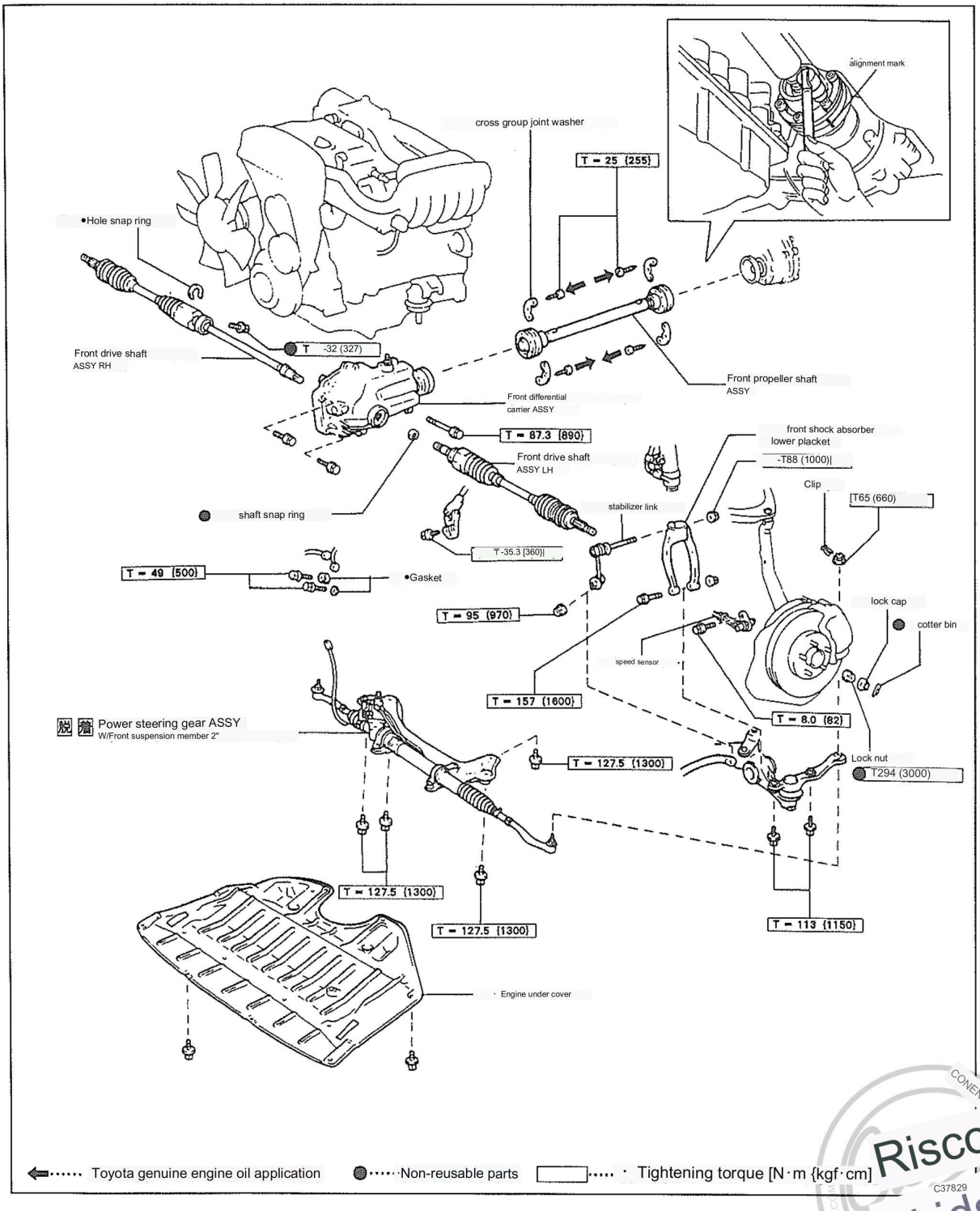
T0049256

Front Differential

Carrier ASSY

Detachment configuration diagram



Toyota genuine engine oil application ●····· Non-reusable parts □····· Tightening torque [N·m {kgf·cm}]

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Front differential carrier ASSY

Points to note during attachment/detachment work

Caution

- Do not make alignment marks with a punch.
- Do not damage the side gear shaft oil seal.

- Power steering gear ASSY and front suspension member

Do not disconnect member No.2.

1 Front differential carrier ASSY installation and removal (1) Using a transmission jack, remove the front suspension.

l support member number 2.

(2) Remove and install front suspension member No.2.

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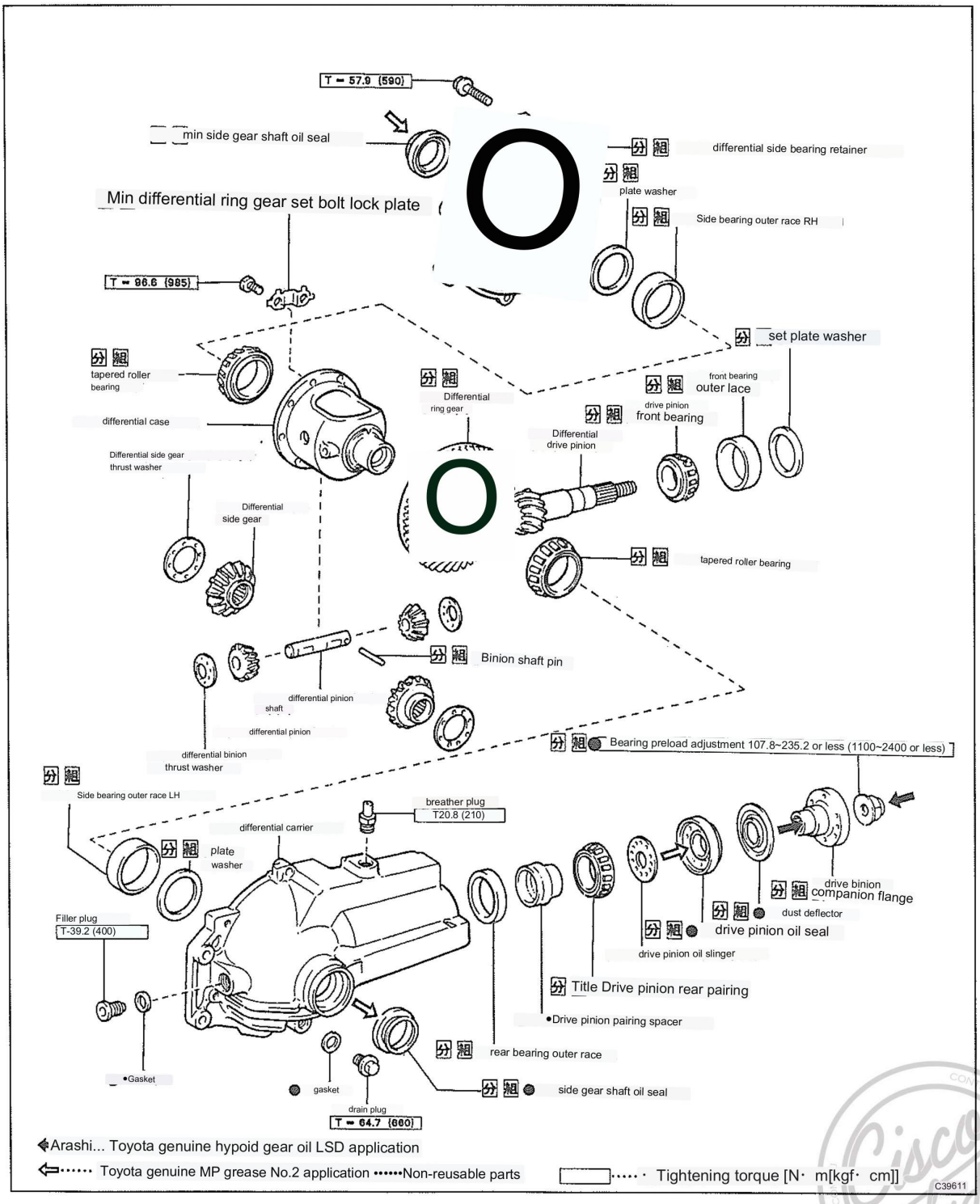
Exploded configuration diagram



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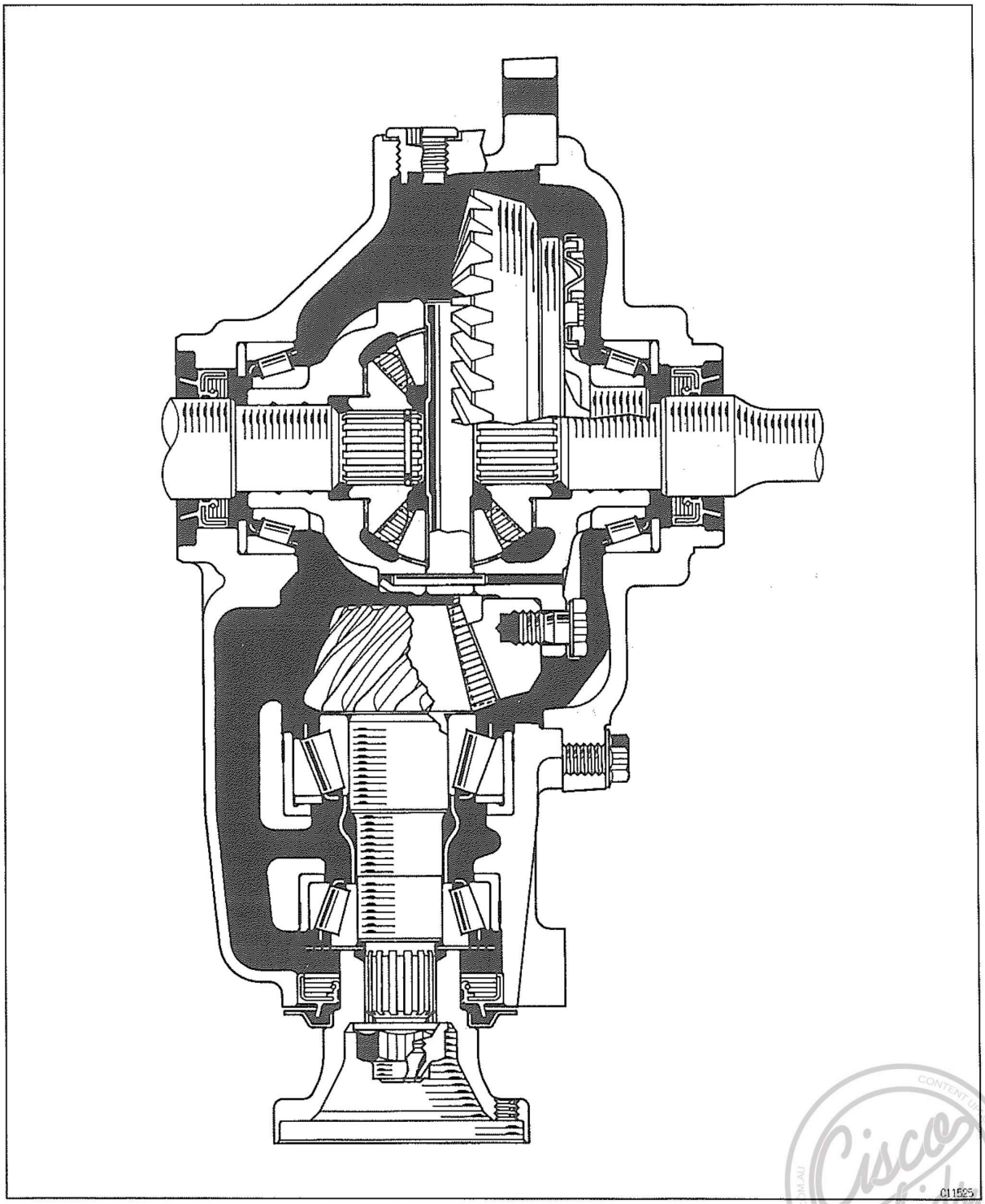
cross section figure



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[noodles steamed]
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Front differential carrier ASSY inspection

<Reference> Inspections 3 to 6 must be performed when disassembling a defective item.

1 Draining differential oil

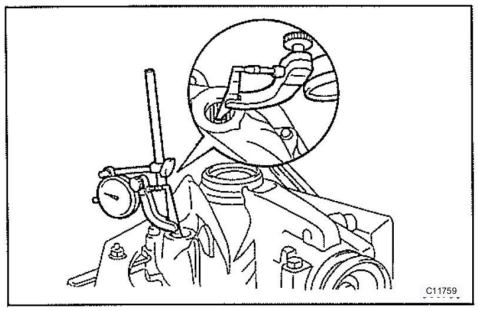
2 Fixing the differential carrier ASSY

(1) Overhaul attachment of the differential carrier ASSY

Fix it to the ment.

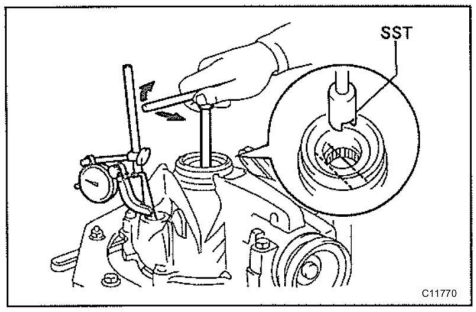
〈参考〉 Remove the differential carrier ASSY using the mounting bolts.

wear.



3 Ring gear backlash inspection

(1) Insert a lever-type probe into the drain plug hole and apply it perpendicularly to the tip of the tooth surface of the ring gear to fix the drive pinion flange.



(2) Use SST to rotate the differential case forward and backward.

Measure backlash.

S ST 09564-32011 Caution

Standard value 0.08~0.13mm

Measure at three or more locations on the ring gear circumference. Four

Inspection of tooth contact between ring gear and drive pinion

("Front differential carrier ASSY assembly"

-Refer to "Inspection of tooth contact between ring gear and drive pinion")

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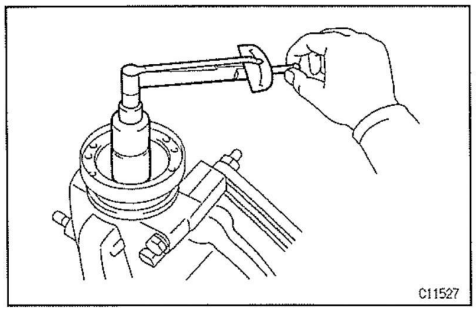


5 Drive pinion preload measurement

(1) Using a torque wrench, tighten the drive pinion and ring gear.

Measure the starting torque within the backlash range.

Standard value 0.49~0.78N·m {5~8kgf·cm)

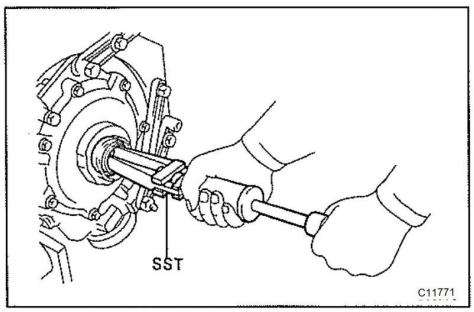
6 Comprehensive preload inspection

(1) Using a torque wrench, tighten the drive pinion and ring gear teeth

Measure the starting torque with the

Standards Comprehensive preload = Drive pinion preload

+0.29~0.49N•m {3~5 kgf•cm}



Front differential carrier ASSY disassembly

1 Side gear shaft oil seal removal

(1) Using SST or a screwdriver, remove the oil seals (RH and LH).

S S T 09308-00010

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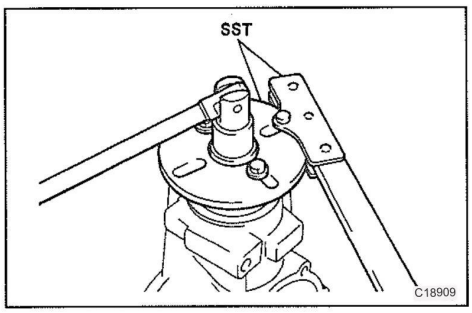
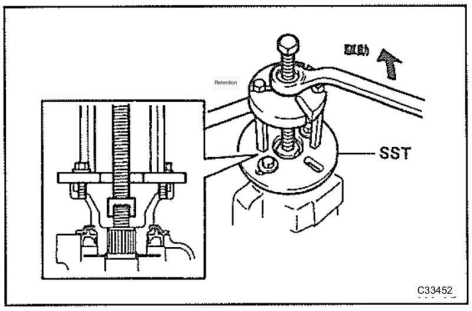


2 Companion flange removal

(1) Unscrew the nut using a chisel. (2) Use SST to secure the companion flange and remove the nut.

Remove.

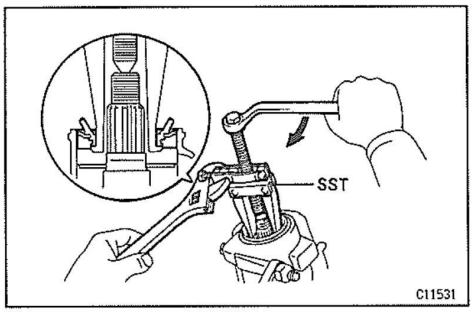
SST 09330-00021 09955-03030



(3) Remove the companion flange using SST.

SST 09951-03010 09953-03010 09954-03010 09955-03030 09956-03020

Apply oil or fat to the threaded part of the center bolt (09953-03010) of SST.

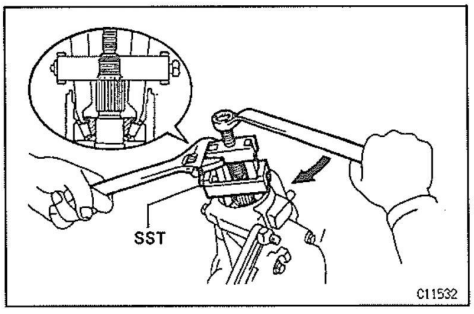


3 Drive pinion oil seal and drive pinion oil

Removing the Ruslinger (1) Using SST, remove the oil seal from the differential carrier sub

S S T 09308-10010

(2) Remove the drive pinion oil slinger.



4 Drive pinion rear bearing and drive pinion bearing

(1) Using SST, remove drive pinion rear bearing from the differential carrier sub ASSY. SST

09556-22010

(2) Remove the drive pinion bearing spacer.

5 Removing the differential side bearing retainer

(1) Remove the 7 bolts.

(2) Using a brass bar, tap the differential side bearing retainer lightly to remove it.

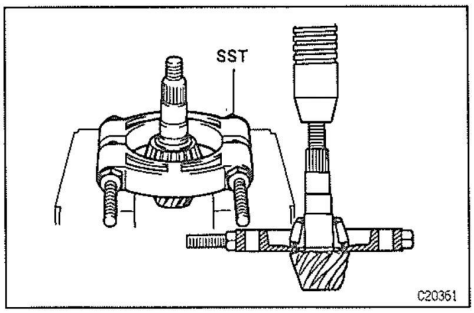
6 Differential case ASSY removal

7 8 Drive pinion W/front bearing removal

Drive pinion front bearing removal

(1) Using SST and a press, remove the front bearing from the drive pinion. SST

09550-00020



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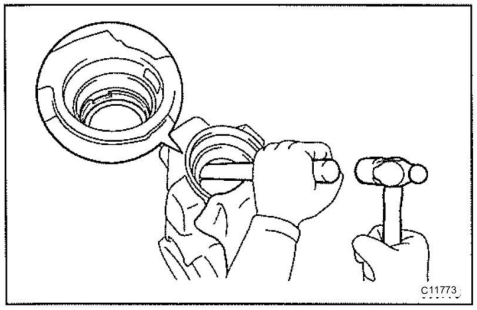
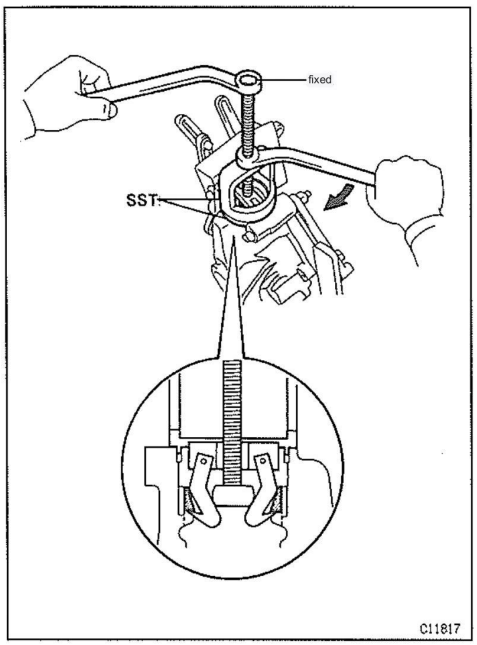


9 Removing the front bearing outer race (1)

Using a brass bar, punch out the front bearing outer race and plate washer from the recess of the differential carrier sub ASSY by tapping them lightly and evenly.

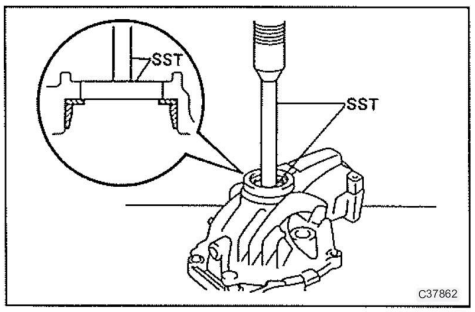


10 Removal of rear bearing outer race

(1) Attach the SST claw to the rear bearing outer race from the recess of the differential carrier sub ASSY. (2) Using SST, differential rear bearing outer race SST from the mechanical carrier sub ASSY.

09502-12010	09612-01020	09612-01050	
	09612-65014		

11

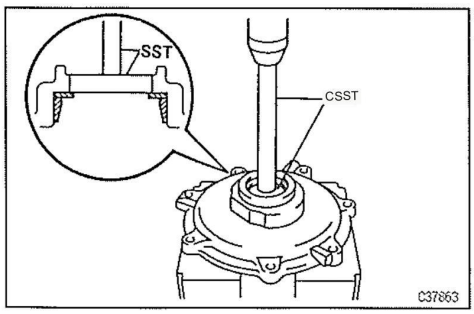


11 Side bearing outer race LH and plate washer

Shear removal

(1) Using SST and a press, remove the side bearing outer race LH and plate washer. SST

09951-00540	09951-07150



12 Side bearing outer race RH and plate washer

Shear removal

(1) Using SST and press, side bearing outerlay Remove the RH and plate washer.

S S T 09951-00540 09951-07150

Caution

Add left and right (back side, tooth side) identification marks to the side bearing outer races, or organize them separately.

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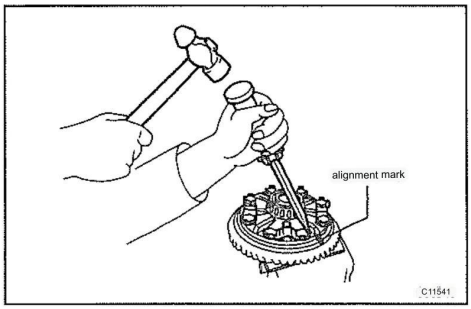


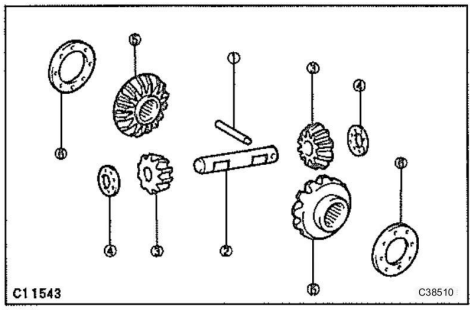
13 Ring gear removal

(1) Place alignment marks on the differential case and ring gear.

(2) Use a screwdriver to unscrew the lock plate.

(3) Remove 8 bolts and 4 lock plates.

(4) Using a plastic hammer, tap the outside of the ring gear. and remove it.



T0049257

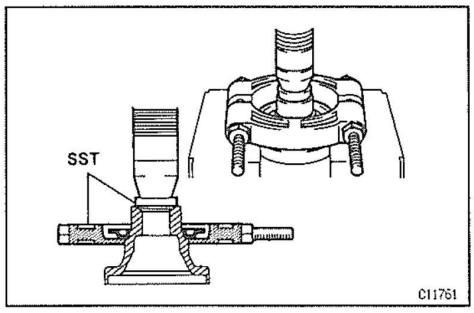
Front differential components

Inspection and adjustment

1 Differential case disassembly

(1) Punch out the pinion shaft pin using a pin punch. (2) Remove the following parts from the differential case.

① Straight pin
② Differential pinion shaft
③ 2 differential pinions
④ 2 pinion thrust washers
⑤ 2 differential side gears
⑥ 2 side gear thrust washers



3 Inspecting the differential case for cracks or damage

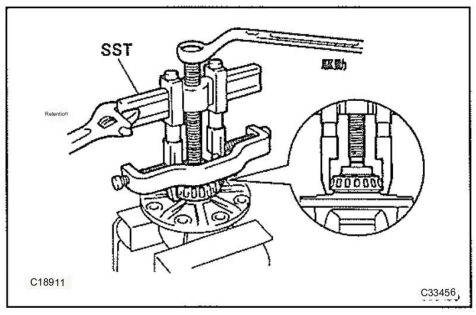
4 Companion Flange Dust Deflector Replacement

(1) Using SST and Press, Drive Pinion Dust Deflector Remove the controller.

SST 00950-00020 00951-00430

(2) Using SST and press, clean the new drive pinion dust Press the deflector into the drive pinion companion flange do.

S ST 09316-00011



5 Tapered roller bearing (side bearing) LH and

(1) Remove the bearing from the notch in the differential case. Apply the SST claw to the inner lace.

(2) Using SST, tapered roller bearings (side bearings) ring) from the differential case.

S S T 09951-00390 09951-04020 09952-04010 09953-04030 09954-04010 09955-04060 09957-04010 09958-04010

Apply oil to the thread and tip of the SST center bolt (09953-04030) before use.

<Reference> Do not remove except when replacing the tapered roller bearing (side pairing).

11

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Front differential carrier ASSY assembly

1 Assembling the differential case

注意 · When assembling the thrust washer, side gear, pinion, etc., make sure that there is no dirt, chips, etc. attached. Apply
• sufficient hypoid gear oil SX to each sliding and rotating part. to clothe

(1) Assemble the thrust washer to the side gear.

(2) Assemble the side gear (with washer), pinion gear, pinion shaft, and pinion thrust washer.

Caution Align the pinion shaft fixing hole with the case hole.

(3) Fix the pinion toward the differential case and check for backlash.

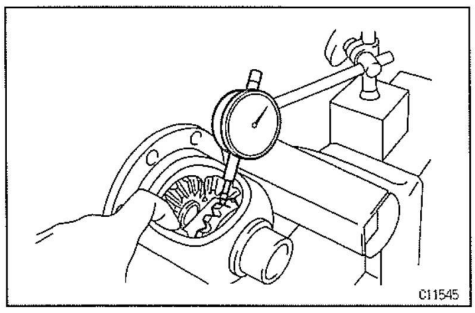
Reference value 0.05~0.20mm

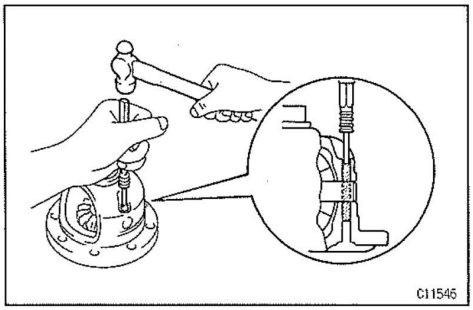
(4) Side gear backlash is within standard values and smooth

Select thrust washers of the same size on both the left and right sides so that the Select and adjust.

<reference> Types of thrust washers

品 Number	thickness []
41361-22140	0.92 0.98
41361-22020	0.97~1.03
41361-22150	1.02~1.08
41361-22030	1.07~1.13
41361-22160	1.12 1.18
41361-22040	1.17 1.23





(5) Using a pin punch, drive the pinion shaft pin into the ring gear from the tooth side.

(6) Use a chisel to cut the outer circumference of the pin hole in the differential case. Caulk.

11

2 Ring gear assembly

(1) Heat the ring gear with boiling water to 90~100℃.

(2) Oil, fat, and water on the mating surfaces of the ring gear and differential case Clean thoroughly.

(3) Align the alignment marks on the differential case and ring gear and quickly assemble the ring gear.

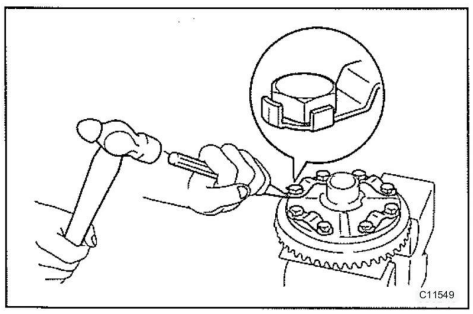
Caution Align the bolt holes on the differential case with the screw holes on the ring gear.

(4) Tighten the 8 set bolts to the specified torque using the 4 new lock plates.

注意 · Tighten the bolts after the ring gear has cooled down sufficiently.
· Tighten the bolts in diagonal order and in several batches.

(5) Use a chisel to raise the claw on the lock plate to prevent it from rotating.

注意 Bend the tab that contacts the width across flats of the bolt until it makes contact with the width across flats. Also, if the claw width is divided into two parts due to contact with the peak of the bolt, make sure that the tightening side of the bolt is in close contact.



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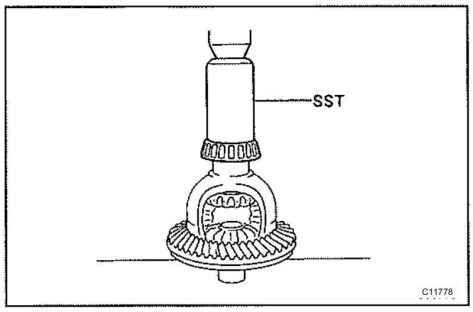
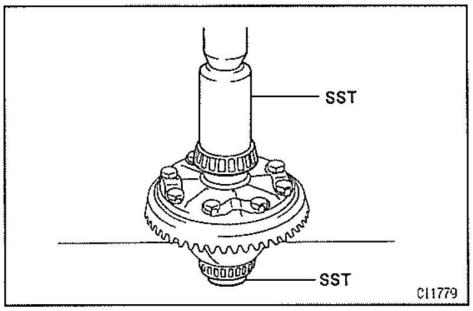


3 Tapered roller bearing (side bearing) LH assembly

(1)

Using SST and a press, press fit the side bearing LH into the differential case.

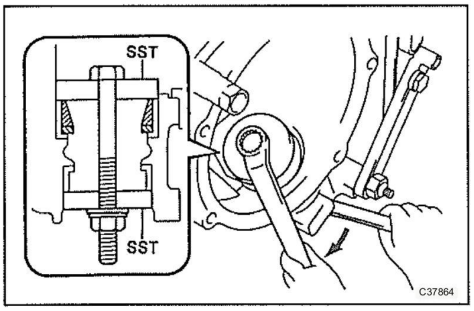
S S T 09636-20010



4 Tapered roller bearing (side bearing) RH assembly

(1) Press the side bearing RH into the differential case using SST and a press. SST

09636-20010 09951-00410



5 Assemble the drive pinion front bearing outer race and plate washer (for tooth contact adjustment)

(1) Using the SST, bolt (M12 x 1.25), nut and washer, install the plate washer and front bearing outer Assemble the lace.

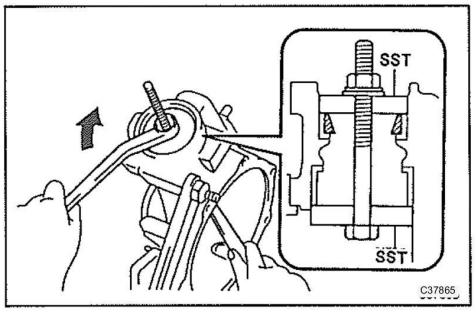
S S T 09951-00810 09951-00640

Caution: Assemble a new plate washer each time you remove it.

(reference) Bolts and nuts used

Bolt...M12 x P1.25 Length under neck 186mm (90101-12159)...M12

ナット x P1.25 (90179-12051)



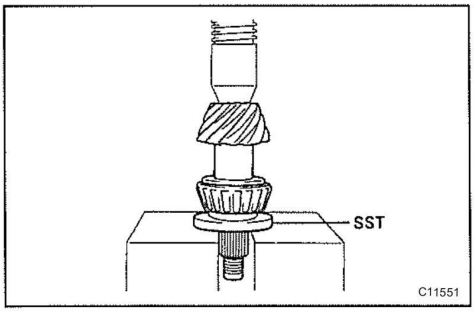
6 Assembling the drive pinion rear bearing outer race (1) Assemble the rear bearing outer race using SST, bolts (M12 x 1.25), nuts and washers.

S S T 09951-00710 09951-00720

〈参考〉 Bolts and nuts used

Bolt...M12 x P1.25 Under neck length 186mm (90101-12159)

Nut...M12 x P1.25 (90179-12051)



7 Drive pinion front bearing assembly

(1) Using SST and a press, press fit the front bearing into the drive pinion.

S S T 09506-30012

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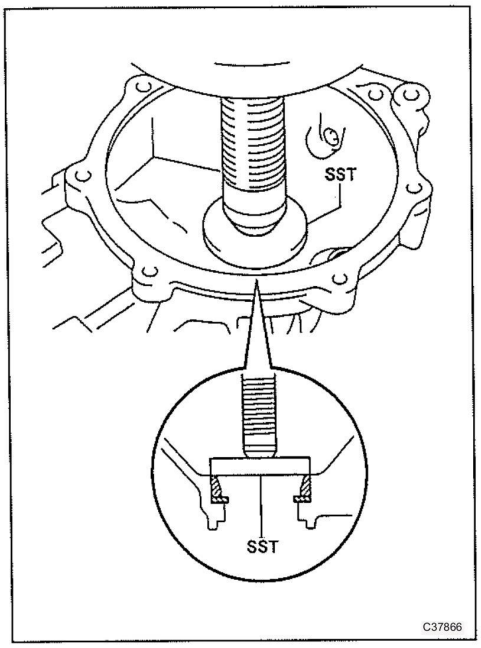


8 Side bearing outer race (LH, RH) and plate Washer assembly

(1) Using SST and press, install outer races (LH, RH) and and press-fit the plate washer.

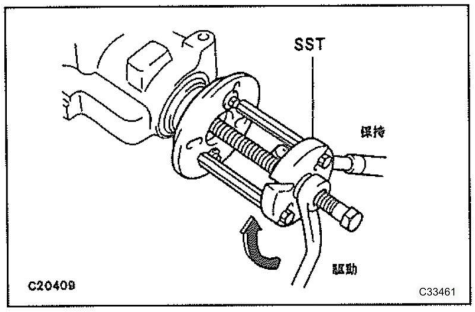
S S T 09951-00730

注意 Assemble the oil seal after checking the tooth contact and adjusting the backlash.

9 Assemble the drive pinion W/front bearing, rear bearing and oil slinger

(1) Assemble the drive pinion W/front bearing, rear bearing and oil slinger to the differential carrier.

注意 The spacer and oil seal will not be assembled in order to inspect the tooth contact of the ring gear, but will be reassembled after the tooth contact has been checked and adjusted.

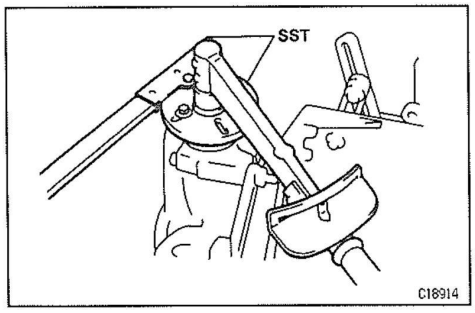


10 Companion flange assembly

(1) Assemble the companion flange using SST.

S S T 09951-03010 09953-03010 09954-03010 09955-03030 09956-03020

注意 SST center bolt (09953-03010) Use by applying oil to the threaded part.



11 Drive pinion preload temporary adjustment

(1) Using SST, adjust the new nut to the specified preload. Tighten little by little.

S S T 09330-00021 09955-03030

Caution · Hypoid gear oil on the threaded part of the nut and drive pinion Apply LSD.· Since there is no spacer included, tighten the nuts little by little. Never tighten it too much.

(2) Use a torque wrench to adjust the starting torque of the drive pinion. 測 Set.

Standard value When the bearing is new: 0.98~1,57N·m {10~16kgf· cm} When the bearing is reused: 0.49~0.78N·m (5~8kgf·

注意 • cm} Rotate forward and reverse several times to adjust the bearing. after Measure.

· Record the brake load in order to measure the total

UP 12 Differential case ASSY assembly

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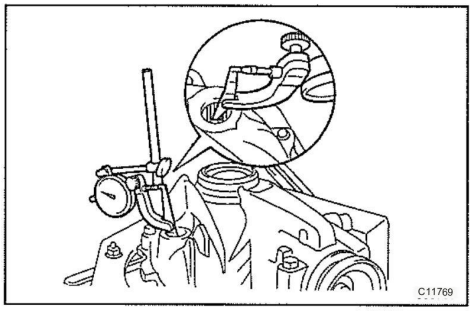

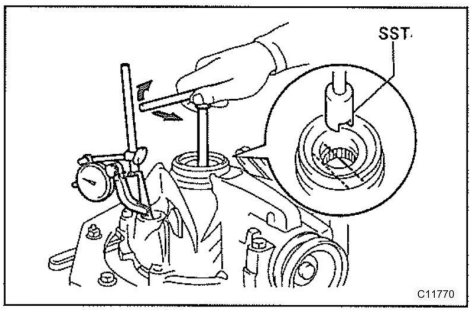

13 Ring gear backlash adjustment

(1) Differential side bearing retainer with 7 bolts

Assemble. (2) Insert

the lever type probe from the drain plug hole and check the ring gear teeth.

Place it on the tip of the face and fix the companion flange.

(3) Use SST to rotate the differential case forward and reverse.

Measure backlash.

S S T 09564-32011

Standards 0.08～0.13㎜

注意 Measure at three or more locations around the ring gear circumference.

(4) If the value is not the standard value, make the left and right plate washers the same thickness.

Increase the amount to bring it within the standard value.

〈参考〉 If the side bearing is new, tighten the plate washer

Select from the thinnest one and assemble it. side bearing

If reusing, remove the plate washer to the same thickness as when disassembled.

Assemble from the beginning.

part number	Identifying mark	Thickness [mm]	part number	Identifying mark	Thickness [mm]]
90564-50006	01	2.22	90564-50032	27	2.74
90564-50007	02	2.24	90564-50033	28	2.76
90564-50008	03	2.26	90564-50034	29	2.78
90564-50009	04	2.28	90564-50035	30	2.80
90564-50010	05	2.30	90564-50036	31	2.82
90564-50011	06	2.32	90564-50037	32	2.84
90564-50012	07	2.34	90564-50038	33	2.86
90564-50013	08	2.36	90564-50039	34	2.88
90564-50014	09	2.38	90564-50040	35	2.90
90564-50015	10	2.40	90564-50041	36	2.92
90564-50016	11	2.42	90564-50042	37	2.94
90564-50017	12	2.44	90564-50043	38	2.96
90564-50018	13	2.46	90564-50048	39	2.98
90564-50019	14	2.48	90564-50049	40	3.00
90564-50020	15	2.50	90564-50050	41	3.02
90564-50021	16	2.52	90564-50051	42	3.04
90564-50022	17	2.54	90564-50052	43	3.06
90564-50023	18	2.56	90564-50053	44	3.08
90564-50024	19	2.58	90564-50054	45	3.10
90564-50025	20	2.60	90564-50055	46	3.12
90564-50026	21	2.62	90564-50056	47	3.14
90564-50027	22	2.64	90564-50057	48	3.16
90564-50028	23	2.66	90564-50058	49	3.18
90564-50029	24	2.68	90564-50059	50	3.20
90564-50030	25	2.70	90564-50060	51	3.22
90564-50031	26	2.72	—	—	—

times times
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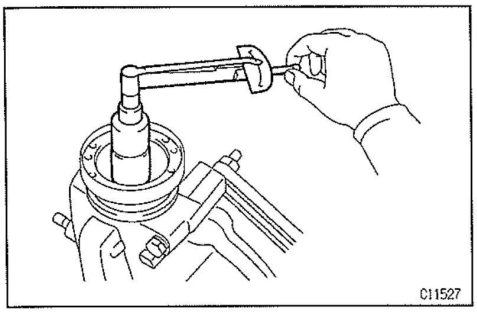


14 Total preload measurement

(1) Measure the total preload using a torque wrench. Startup torque measurement with drive pinion and ring gear tooth surfaces in contact do.

Standard value Total preload = Drive pinion preload +0.29~0.49N·m {3~5kgf·cm} If it is outside the standard value, use the plate washers on both sides of the tooth surface of the ring gear. Adjust with.

15 Inspecting ring gear and drive pinion tooth contact

(1) Remove the 7 bolts and remove the differential side bearing retainer.

(2) Remove the differential case from the differential carrier. Remove it.

(3) Apply a thin layer of Komyotan evenly on both sides of the tooth surface of the ring gear. (4) Assemble the differential side bearing retainer with 7 bolts.

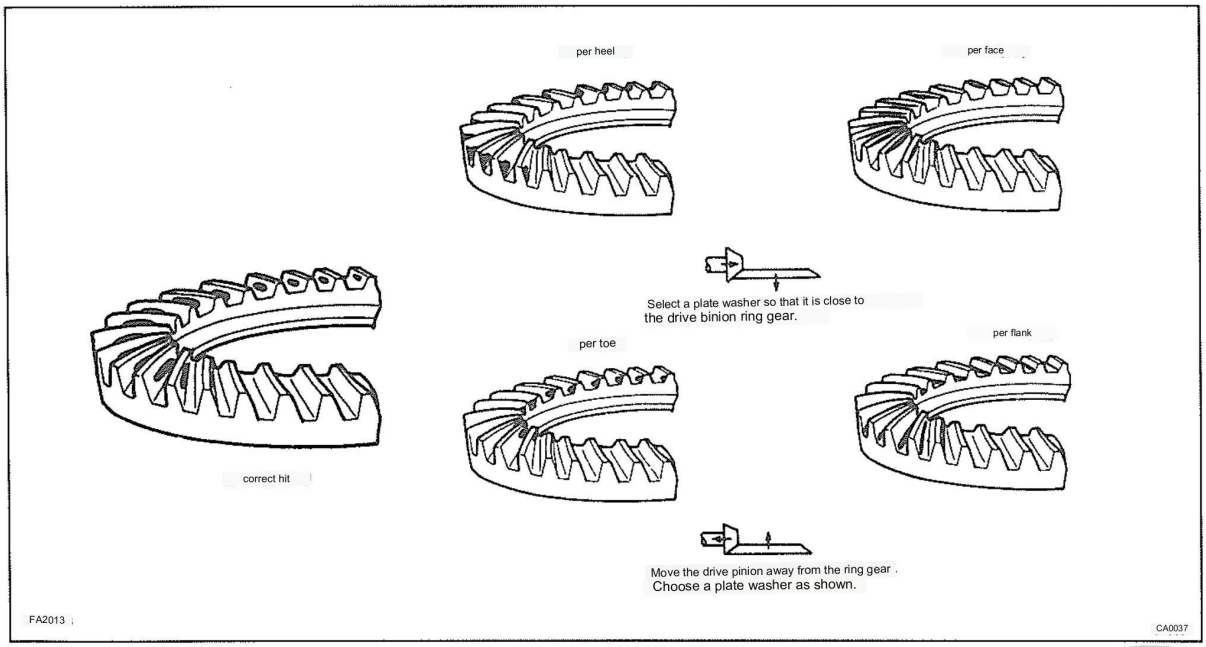
("Front differential carrier ASSY" - Refer to "Front differential carrier ASSY assembly")

(5) Rotate the companion flange several times.

(6) Remove the 7 bolts and remove the differential side bearing. Remove the tenor.

("Front differential carrier ASSY" - See "Front Differential Carrier ASSY Disassembly")

(7) Check the tooth contact between the drive pinion and ring gear. Check the contact status at two locations on the circumference of the ring gear.



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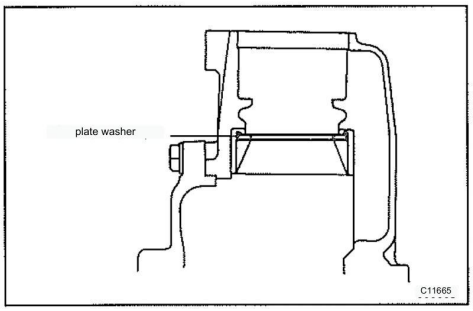


(8) If tooth contact is poor, select a plate washer for the drive pinion front bearing outer race from the table and reinstall.

注意 · Backlash base for face contact and flank contact
In some cases, it can be adjusted within standard values.
· When changing the thickness of the plate washer (for tooth contact adjustment) requires backlash adjustment and total preload measurement.·
Plate washers (for tooth contact adjustment) cannot be reused.

<Reference> Types of plate washers

part number	Identifying mark	Thickness [mm]	part number	Identifying mark	thickness []
90564-54005	35	2.35	90564-54023	53	2.53
90564-54006	36	2.36	90564-54024	54	2.54
90564-54007	37	2.37	90564-54025	55	2.55
90564-54008	38	2.38	90564-54026	56	2.56
90564-54009	39	2.39	90564-54027	57	2.57
90564-54010	40	2.40	90564-54028	58	2.58
90564-54011	41	2.41	90564-54029	59	2.59
90564-54012	42	2.42	90564-54030	60	2.60
90564-54013	43	2.43	90564-54031	61	2.61
90564-54014	44	2.44	90564-54032	62	2.62
90564-54015	45	2.45	90564-54033	63	2.63
90564-54016	46	2.46	90564-54034	64	2.64
90564-54017	47	2.47	90564-54035	65	2.65
90564-54018	48	2.48	90564-54036	66	2.66
90564-54019	49	2.49	90564-54037	67	2.67
90564-54020	50	2.50	90564-54038	68	2.68
90564-54021	51	2.51	90564-54039	69	2.69
90564-54022	52	2.52	90564-54040	70	2.70

11

16 Removing the nut and companion flange

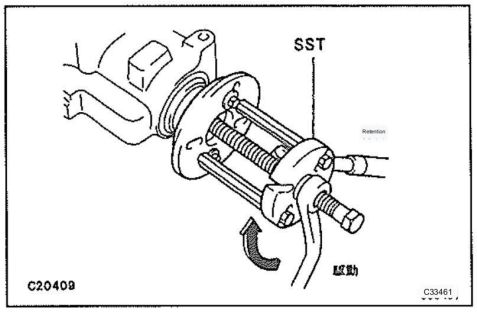
17 Removal of oil slinger and rear bearing

18 Removal of differential case

19 Drive pinion bearing spacer assembly

(1) Assemble a new bearing spacer to the drive pinion.

注意 Turn the larger inner diameter toward the front.



20 Assembling the drive pinion rear bearing

(1) Assembling the drive pinion rear bearing to the drive pinion

Kick.

(2) Assemble the drive pinio rear bearing using the SST and companion flange.

Apply and use.

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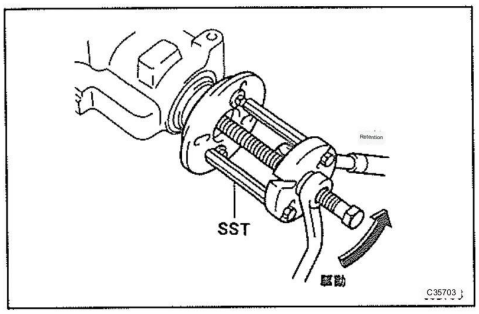


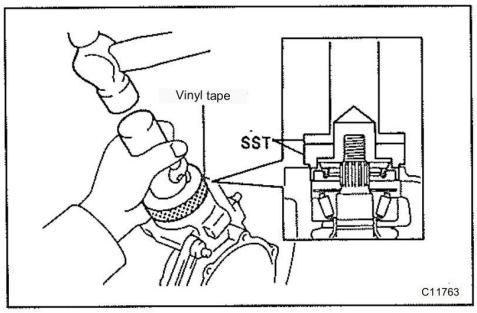
21 Assembling the drive pinion oil slinger and drive pinion oil seal

(1) Using SST, remove the companion flange.

SST 09951-03010 09953-03010 09954-03010 09955-03030 09956-03020

Caution SST center bolt (09953-03010) Apply oil to the threaded part before use.

(2) Assemble the drive pinion oil slinger to the drive pinion. wear.



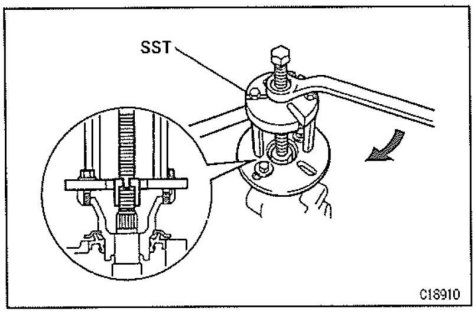
(3) Using SST and a hammer, drive in a new oil seal.

nothing.

S ST 09309-36010 09502-12010

Standard value Oil seal driving amount (from the inner end of the carrier)

注意
- 1 ±0.3mm Fix the two SSTs with vinyl tape.
- Apply MP grease No.2 to the oil seal lip.

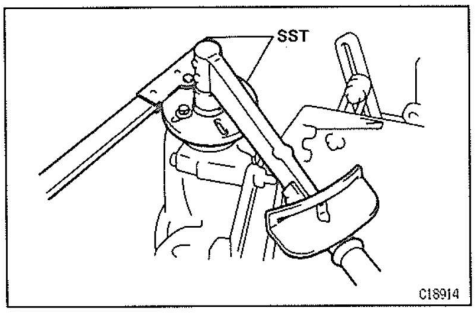


22 Companion flange assembly

(1) Assemble the companion flange using SST. SST

09951-03010 09953-03010 09954-03010 09955-03030 09956-03020

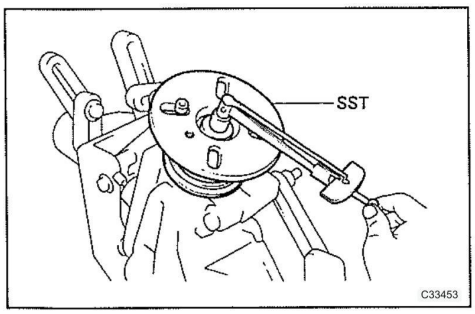
注意 Apply oil to the threaded part of the SST center bolt (09953-03010) before use.



(2) Fix the flange using SST and tighten to the specified torque.

S ST 09330-00021 09955-03030

注意 Apply hypoid gear oil SX to the threads of the new nut. Ru.



23 Drive pinion preload adjustment

(1) Using a torque wrench, measure the starting torque within the backlash range of the drive pinion and ring gear.

Standard value When the bearing is new: 0.98~1.57N·m {10~16kgf·cm}
When the bearing is reused: 0.49~0.78N·m {5~8kgf·cm) COA

注意 the flange forward and reverse several times to adjust the bearing. times
Measure after doing

so. (2) If the preload is excessive, replace the drive ング pinion bearing spacer.

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(3) If the preload is insufficient, tighten the nut in 5~10° increments.
Measure the preload and repeatedly adjust it to the standard value.

(4) If the preload is insufficient even if the nut tightening torque exceeds the limit value, loosen the nut once and check that the nut and drive pinion threads are not flattened. If there is no abnormality, replace the spacer, apply gear oil to the threaded part, and repeat the above operation.

24 Differential case ASSY assembly

25 Differential side bearing retainer assembly

(1) Clean the seal packing attached to the differential carrier sub ASSY and differential side bearing retainer with a scraper, etc., and then remove the oil with cleaning liquid.

(2) Apply Seal Packing 1281 to the position shown in the left figure.

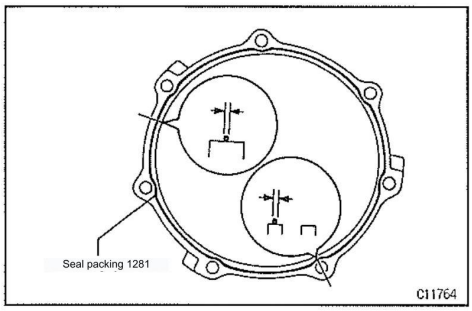
[Note:] Apply the seal packing at medium 1 to 2 so that there are no cuts.· Overlap the ends of the cloth by at least 10mm.

- Assemble within 3 minutes after applying the seal packing.

(3) Assemble with 7 bolts.

注意 After assembling the cover, immediately add oil or drive. Leave it for at least 1 hour. Also, within the next 12 hours, the

Avoid excessive acceleration and deceleration.



26 Comprehensive preload inspection ("Front differential carrier ASSY inspection"

— (See "Comprehensive Preload Inspection")

Standard value Total preload = Drive pinion preload

+0.29~0.49N·m {+3~5kgf·cm}

27 Drive pinion and ring gear backlash inspection ("Front differential carrier ASSY inspection")

— (See "Ring gear backlash inspection")

S S T 09564-32011

Reference value 0.08~0.13mm

注意 Measure at three or more locations around the ring gear circumference.

28 Inspection of tooth contact between ring gear and drive pinion ("Front differential carrier ASSY assembly") -

(Refer to "Inspection of tooth contact between ring gear and drive pinion")

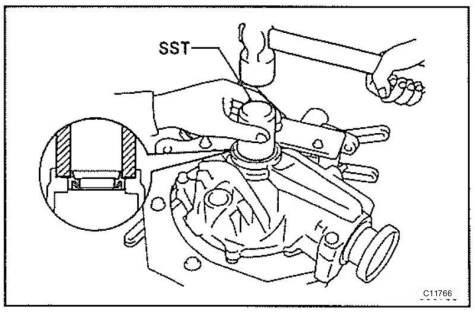
29 Tighten the drive pinion nut 30 Assemble the side gear shaft oil seal

(1) Using SST, install two new oil seals to the differential Assemble it to the carrier ASSY.

S S T 09223-00010

Standard value Oil seal driving amount (from carrier end face) 1.5±0.5mm

Caution: Apply MP grease No. 2 to the oil seal lip.



31 Drain plug assembly

32 Filler plug assembly

<Reference> Temporarily tighten the filler plug, then tighten it after adding oil.

33 Differential carrier ASSY removal

(1) Remove the differential carrier ASSY from the overhaul attachment.

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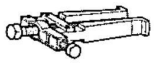
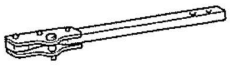
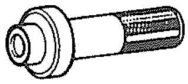
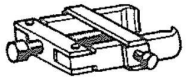
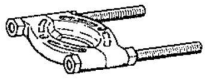
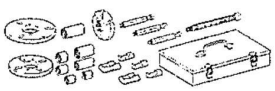
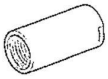
T0048856

rear drive pinion

Oil seal

supplies

SST

	09308-10010	oil seal puller	Drive pinion oil seal removal 用
	09330-00021	Companion flange holding tool	For companion flange retention
	09554-30011	Differential oil seal replacer	For installing drive pinion oil seal
	09556-22010	Drive pinion front bearing remover	For removing tapered roller bearing (front bearing)
	09950-00020	bearing remover	Drive pinion dust deflector removed for
	09950-30010	Blur A set	
	(09951-03010)	Upper plate	Companion flange removal/removal
	(09953-03010)	Center bolt "	Companion flange removal/removal
	(09954-03010)	Arm	Companion flange removal/removal
	(09955-03030)	Lower plate 130	Companion flange removal/removal
	(09956-03020)	Adapter 18	Companion flange attachment/detachment (7.5 inch)
	(09956-03030)	Adapter 20	Companion flange removal (8 inch)

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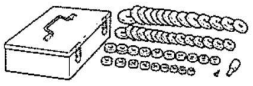
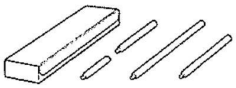
Differential rear drive pinion oil seal

	09950-60010	Replacer set	
	(09951-00510)	Replacer 51	Drive pinion dust deflector removed for
	09950-70010	Handle set	
	(09951-07150)	handle 150	Drive pinion dust deflector removed for

tool

Chisel 11101	Drive pinion nut unstaking and staking め用
Torque wrench [0~3N· m {0~30kgf· cm}] 20114	For preload measurement
Torque wrench [69~412N·m {700~4200kgf·cm}] 20121	For tightening the drive pinion nut

Oils and fats/others

Toyota genuine MP grease No.2 30204	For oil seal lip application
Toyota genuine hypoid gear oil SX 30709	Differential (excluding 2 pinion LSD) for injection
Toyota genuine hypoid gear oil LSD 30711	For differential (2 pinion LSD) injection and drive pinion application

11

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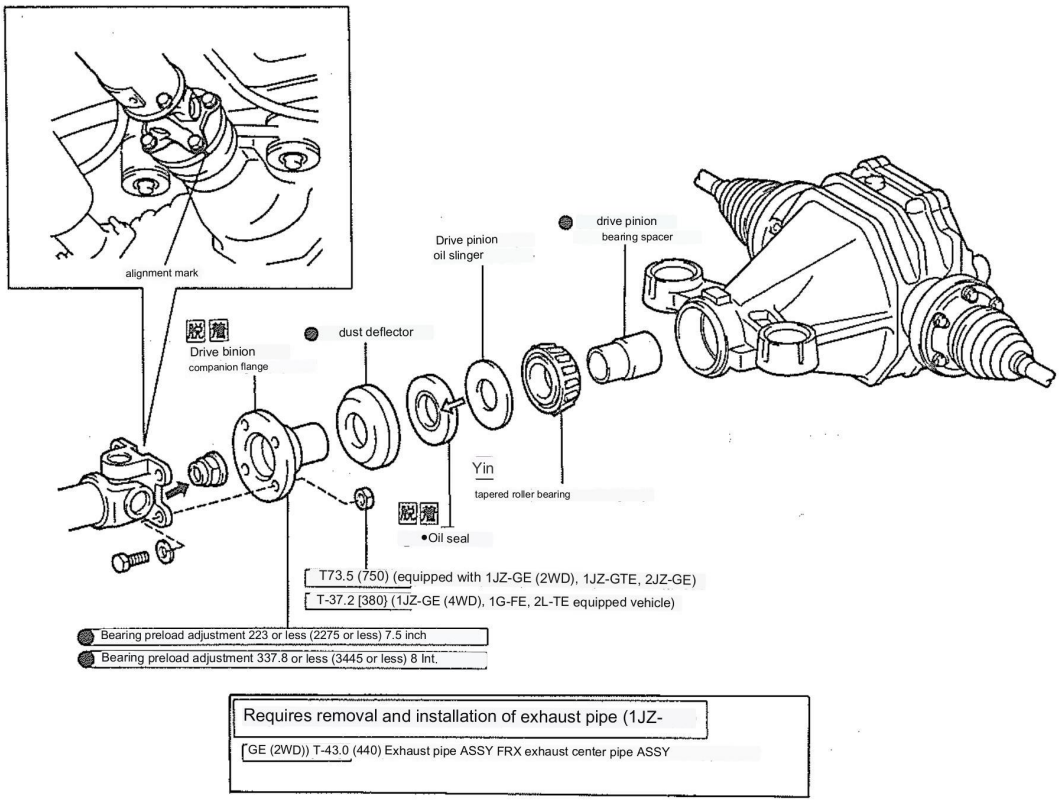
T0040887

rear drive pinion oil seal

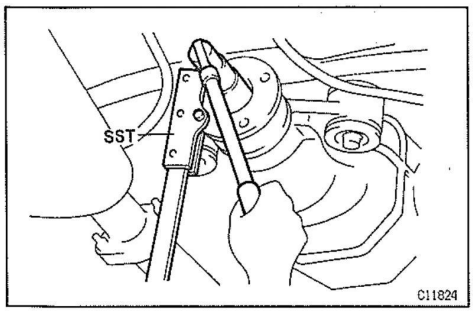
Detachment configuration diagram

注意 · Do not apply excessive force to the propeller shaft joint.
Hanging the sea urchin propeller shaft.
· Do not make alignment marks with a punch.



Now... Toyota genuine hypoid gear oil LSD applied
←· · · · Apply Toyota genuine MP grease No.2 · Non-reusable [ ]parts · · Tightening torque [N· m[kgf· cm)]

C37807



rear drive pinion oil seal

Points to note during attachment/detachment work

1 Companion flange attachment/detachment

(1) Unscrew the nut using a chisel.

注意 After assembly, tighten the nut.

(2) Fix the flange using SST and remove the nut. SST

09330-00021 Cisco

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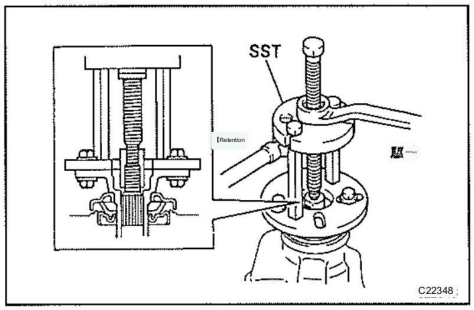
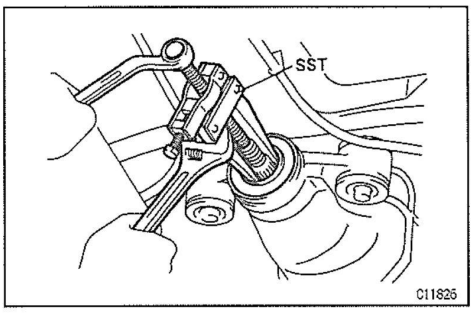


(3) Use SST to attach and detach the companion flange.

S S T 09951-03010 09953-03010 09954-03010
09955-03030 09956-03020 (7.5 inches)
09956-03030 (8 inches)

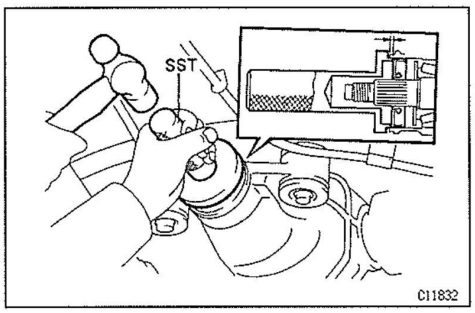
•Caution) SST center bolt (09953-03010) Do not use oil or fat on the threaded part.
Apply and use.



2 Drive pinion oil seal removal and removal

(1) Remove the oil seal using SST.

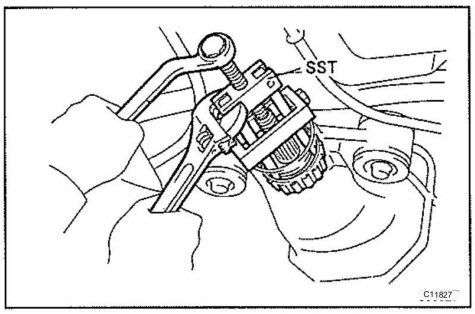
S S T 09308-10010



(2) When installing, use SST to drive in a new oil seal.

nothing.
S ST 09554-30011
Standard value Oil seal driving (from carrier end face) 1.5mm
注意 Apply MP grease No.2 to the oil seal lip.

11



3 Tapered roller bearing (front bearing)

removal

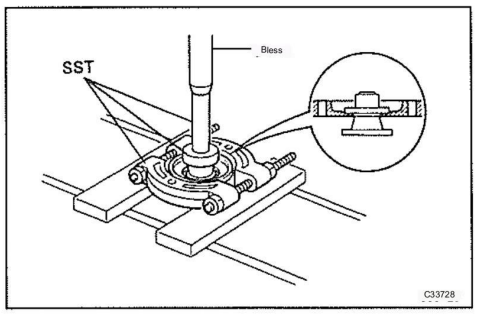
(1) Using SST, remove the tapered roller bearing.

S S T 09556-22010

(2) When installing, use a new drive pinion bearing spacer.

Attach the sensor.

& Turn the larger inner diameter toward the rear.



4 Drive Pinion Dust Deflector Replacement

(1) Using SST and press, drive pinion dust deflector replacement

Remove the controller.

S S T 09950-00020 09951-00510 09951-07150

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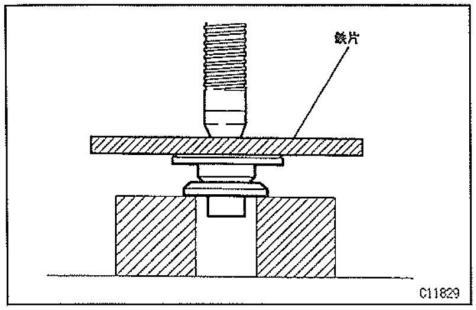

(2) Use a press to press in a new dust deflector. When press-fitting,

注意 do it slowly little by little while checking the dust deflector, and do not press-fit too much. If burrs occur during press-fitting, remove them.

5 Drive pinion preload inspection

(1) Using a torque wrench, tighten the drive pinion and ring gear. Measure the starting torque within the backlash range.

Standards

	7.5 inches	8 inch
When the bearing is new	1.18～1.86N•m {12～19kgf•cm}	1.08～1.67N•m {11～17kgf•cm}
When reusing bearings	0.59～0.98N•m {6～10kgf•cm}	0.59～0.88N•m {6～9kgf•cm}

Note Rotate the flange forward and reverse several times to adjust the bearing. Measure after doing so.

(2) If the preload is excessive, replace the bearing spacer. (3) If the preload is insufficient, tighten the nut in 5~10° increments. Measure the preload and repeatedly adjust it to the standard value.

(4) If the preload is insufficient even if the nut tightening torque exceeds the limit, loosen the nut once and tighten the nut and drive pinion. Check that the screw threads are not crushed.

(5) If there is no abnormality, replace the spacer and attach a hypoid gear to the threaded part. After applying Hypoid Gear Oil SX and Hypoid Gear Oil LSD. Repeat the above steps.

6 Oil level inspection and adjustment (see “Basic inspection” and “Differential oil level inspection”)

11

return home times
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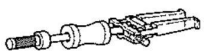
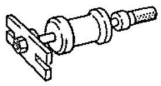
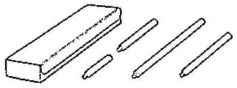
T004888

Rear side gear

shaft oil seal

supplies

SST

	09308-00010	Oil seal puller	Side gear shaft oil seal removal 用
	09520-24010	Differential side gear shaft puller	Side gear shaft removal and removal
	09550-00032	replacer	For installing side gear shaft oil seal
	09950-70010	Handle set	
	(09951-07150)	Handle 150	For installing side gear shaft oil seal

tool

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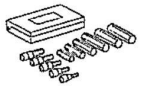
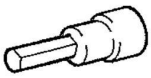
plastic hammer		12101	For drive shaft removal
	09040-00010	hexagon wrench set	
	(09043-20080)	Socket hexagon wrench 8	Drive shaft removal and removal (vehicles equipped with 1JZ-GE)
socket hexagon wrench 10 09043-20100		70026	For drive shaft removal and removal (1JZ-GTE, 2JZ-GE equipped vehicles) For drive shaft tightening
Torque wrench [30~190Nm {300~1900kgf· cm}]		20118	

Oils and fats Others

Toyota genuine MP grease No. 2	30204	For oil seal lip application
Toyota genuine hypoid gear oil SX	30709	Differential (excluding 2 pinion LSD) Injection 用
Toyota genuine hypoid gear oil LSD	30711	Differential (2 pinion LSD) injection for

times
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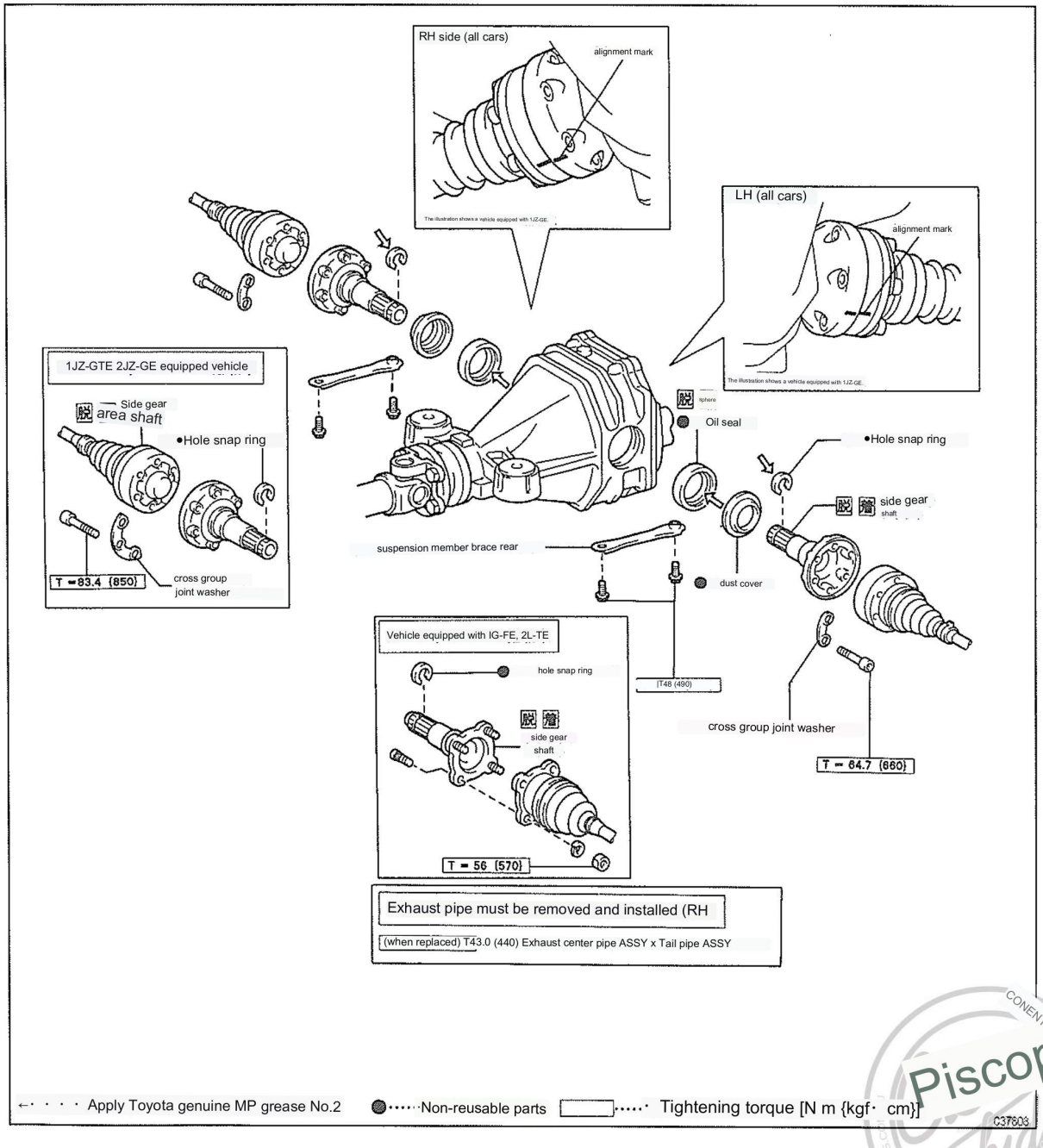
T0G46660

Rear side gear shaft oil seal

Detachment configuration diagram

•Caution
- Be careful not to damage the drive shaft inboard joint end cover and boot. Do not make
- alignment marks with a punch.



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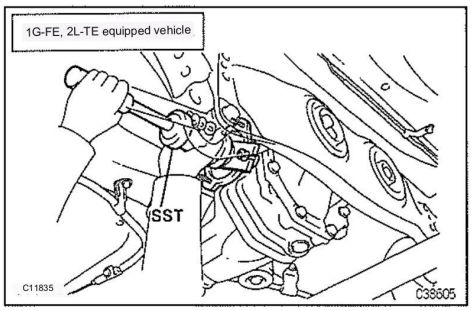
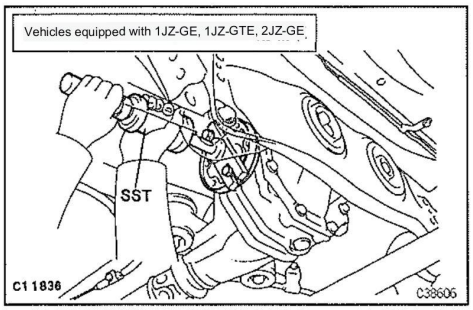




Rear side gear shaft oil seal

Points to note during attachment/detachment work

1 Side gear shaft removal and removal

(1) Fix the SST to the side gear shaft and remove the side gear shaft.

wear it.

S S T 09520-24010

(Caution) - When installing, install the snap ring with the cut end facing downward.

Kick.·

Apply MP grease No. 2 to the new snap ring. - When

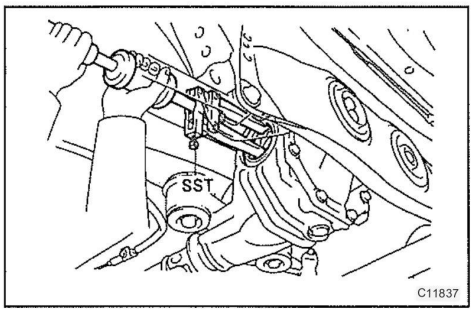
inserting, do not drive in diagonally. If you drive it diagonally, the

Replace the nap ring with a new one and drive it in again.

· Does not damage the oil seal. When

<reference> driving, it is possible to judge whether the ball is hitting the pinion shaft by changes

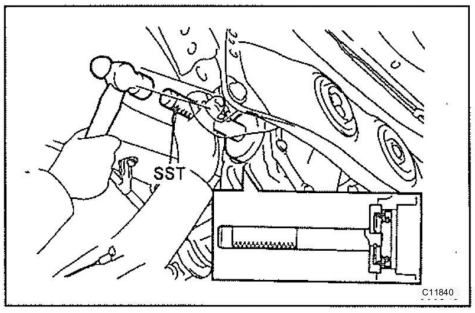
in the repulsive force of the SST or changes in sound quality.



2 Side gear shaft oil seal removal and removal

(1) Remove the oil seal using SST. SST

09308-00010



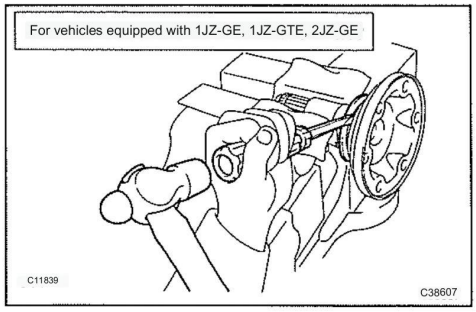
(2) During installation, use SST to attach the new oil seal to the carrier end.

Drive it all the way to the surface.

SST 09550-00032 09951-07150

Standard height 0±0.5mm from carrier end face

[Caution] Apply MP Grease No. 2 to the oil seal lip.



3 Side gear shaft dust cover replacement

(1) Wrap a cloth around the shaft and secure it in a vise.

Caution Do not tighten the vise too tightly.

(2) Use a screwdriver to remove the dust cover.

(3) Use a screwdriver to remove the hole snap ring.

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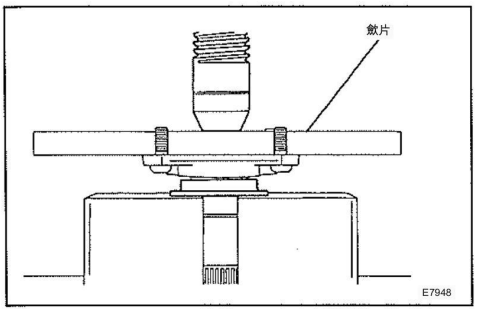

(4) Using a press, attach the new dust cover to the side gear shaft

Press it in until it touches. When

注意 press-fitting, check the dust cover and slowly press in little by little.

Ascending center, press-fit 7 inches.

4 Inspection and adjustment of quantity

("Basic point pine" - "\>>>+儿cai 亻儿 inspection] tea)

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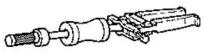
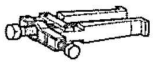
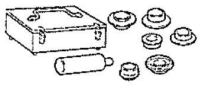
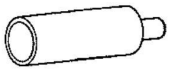
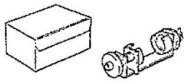
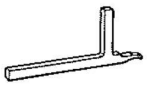
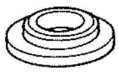
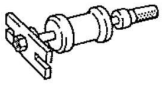
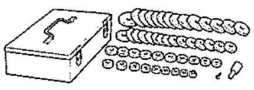
T0046590

rear differential

Carrier ASSY

supplies

S S T

	09308-00010	oil seal puller	For side gear shaft oil seal removal
	09308-10010	oil seal puller	For removing drive pinion oil seal
	09316-60011	Transmission & Transfer Pairing Ribracer	
	(09316-00011)	replacer pipe	For tapered roller bearing (side bearing) installation (8 inch)
	(09316-00031)	Ribracer B	a For dimension measurement (2 pinion LSD)
	09330-00021	Companion flange holding tool	For companion flange retention
	09411-22012	Side gear thrust washer adjustment tool	a For dimension and C dimension measurement (2 pinion LSD)
	09504-22011	Differential side washer remover & replacer	Plate washer removal and removal
	09506-30012	Differential Drive Binion Rear Bearing Cone Replacer	For installing drive binion rear bearing
	09520-24010	Differential side gear shaft puller	Side gear shaft removal and removal
	09950-60010	replacer set	
	(09951-00330)	Replacer 33	Differential case cover removal/removal (2 pinion LSD)

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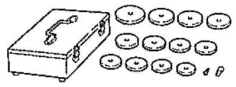
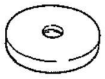
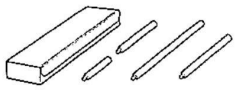
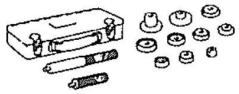
Replacer 50 09951-00500		70120	Differential case cover removal/removal (2 pinion LSD)
	09950-60020	Ribracer set No.2	
	(09951-00720)	Ribracer 72	For front bearing outer race installation
Replacer 79 09951-00790		70143	For rear bearing outer race installation (7.5 inch)
Replacer 89 09951-00890		70145	For rear bearing outer race installation (8 inch)
	09950-70010	handle set	
	(09951-07100)	Handle 100	Differential case cover removal/removal (2 pinion LSD)
Handle 150 09951-07150		70149	For installing side gear shaft oil seal
Handle 200 09951-07200		70150	For installing drive pinion bearing outer race
	09550-10012	Replacer set B	
	(09252-10010)	Replacer handle No.1	For installing tapered roller bearings (side bearings)
	(09557-10010)	Differential drive pinion front bearing replacer	For tapered roller bearing (side bearing) installation
	(09558-10010)	Rear axle shaft oil seal replacer	For tapered roller bearing (side bearing) installation
	09550-00032	replacer	For installing side gear shaft oil seal
	09950-30010	Blur A set	
	(09951-03010)	Upper plate	Companion flange removal/removal

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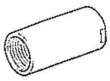
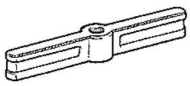
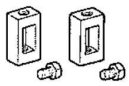
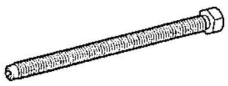
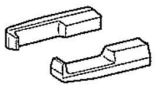
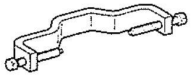
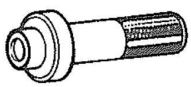
Differential carrier rear differential carrier ASSY

	(09953-03010)	Center bolt	Companion flange removal/removal
	(09954-03010)	Arm	Companion flange removal/removal
	(09955-03030)	Lower plate 130	Companion flange removal/removal
	(09956-03020)	Adapter 18	Companion flange attachment/detachment (7.5 inch)
	(09956-03030)	Adapter 20	Companion flange detachable (8 inch)
	09950-40010	Blur B set	
	(09951-04020)	Hanger 200	Tapered roller bearing (side bearing) for removal
	(09952-04010)	Slide arm	Tapered roller bearing (side bearing) for removal
	(09953-04030)	Center bolt 200 *	Tapered roller bearing (side bearing) for removal
	(09954-04010)	Arm 25	Tapered roller bearing (side bearing) for removal)
	(09955-04060)	Crow No.6	Tapered roller bearing (side bearing) for removal
	(09957-04010)	Attachment	Tapered roller bearing (side bearing) for removal
	(09958-04010)	Holder	Tapered roller bearing (side bearing) for removal
	09554-30011	Differential oil seal replacer	Cisco for drive pinion oil seal installation

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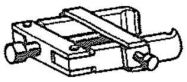
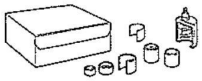
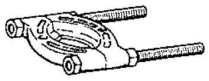
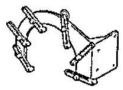
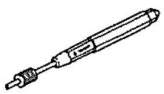
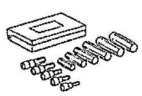
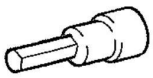
	09556-22010	Drive binion front bearing remover	Tapered roller bearing (front bearing) for removal
	09710-22021	Front suspension bushing tool set	
	(09710-01031)	Upper arm bush replacer	a For dimension measurement (2-binion LSD)
	09950-00020	bearing remover	For removing drive pinion rear bearing

tool

	HUJ-1TB TL-AT	transmission jack atta itchment 株Treated as Banzai Treated as Iyasaka Co., Ltd.	Differential carrier ASSY removal/removal
	ES-5TB TL-FR	A/T overhaul attachment for FR handled by Banzai Co., Ltd. Treated as Iyasaka Co., Ltd.	For fixing the differential carrier
	09031-00040	Bottle punch (Φ5mm)	For detachable straight pin
	09040-00010	Hexagon wrench set	
	(09043-20060)	Socket hexagon wrench 6 *	Rear stabilizer bar removal and removal
	socket hexagon wrench 8 09043-2008 0	70025	Drive shaft removal and removal (Vehicle equipped with 1JZ-GE)
	Socket hexagon wrench 10 09043-20100	70026	Drive shaft removal and removal (Vehicles equipped with 1JZ-GTE, 2JZ-GE)
	socket hexagon wrench 12 09043-20120	70027	Differential carrier ASSY removal/removal

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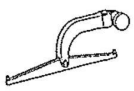	XY-1	Dial gauge lever type stylus Treated as Banzai Co., Ltd., Iyasaka Co., Ltd.	For companion flange runout inspection
	Torque wrench [0~3N· m(0~30kgf· cm)]	20114	For preload measurement
	Torque wrench [69~412N· m {700~4200kgf· cm}]	20121	For tightening the drive pinion nut
	Micrometer (0~25mm)	20301	For conical spring thickness measurement

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Micrometer (25~50mm) 20303	For C dimension measurement (2-binion LSD)
outside pass 21901	Inspection of side gear shaft driving amount

Oils and fats Others

wire brush 11701	For seal packing cleaning
Toyota genuine MP grease No.2 30204	For oil seal lip application
Toyota genuine hypoid gear oil SX 30709	Differential (excluding 2-binion LSD) for injection
Toyota genuine hypoid gear oil LSD 30711	For differential (2 pinion LSD) injection
Adhesive 1324 50401	For differential case cover bolt application (2 pinion LSD)
Seal packing 1281 50901	For application to differential carrier cover and axle housing end gasket For
heater 51901	heating ring gear
Wire (Φ2mm) 52003	Propeller shaft and drive shaft suspension | For hanging
Komyotan S2801	For tooth contact inspection
iron piece 53608	For press-fitting dust deflectors and dust covers

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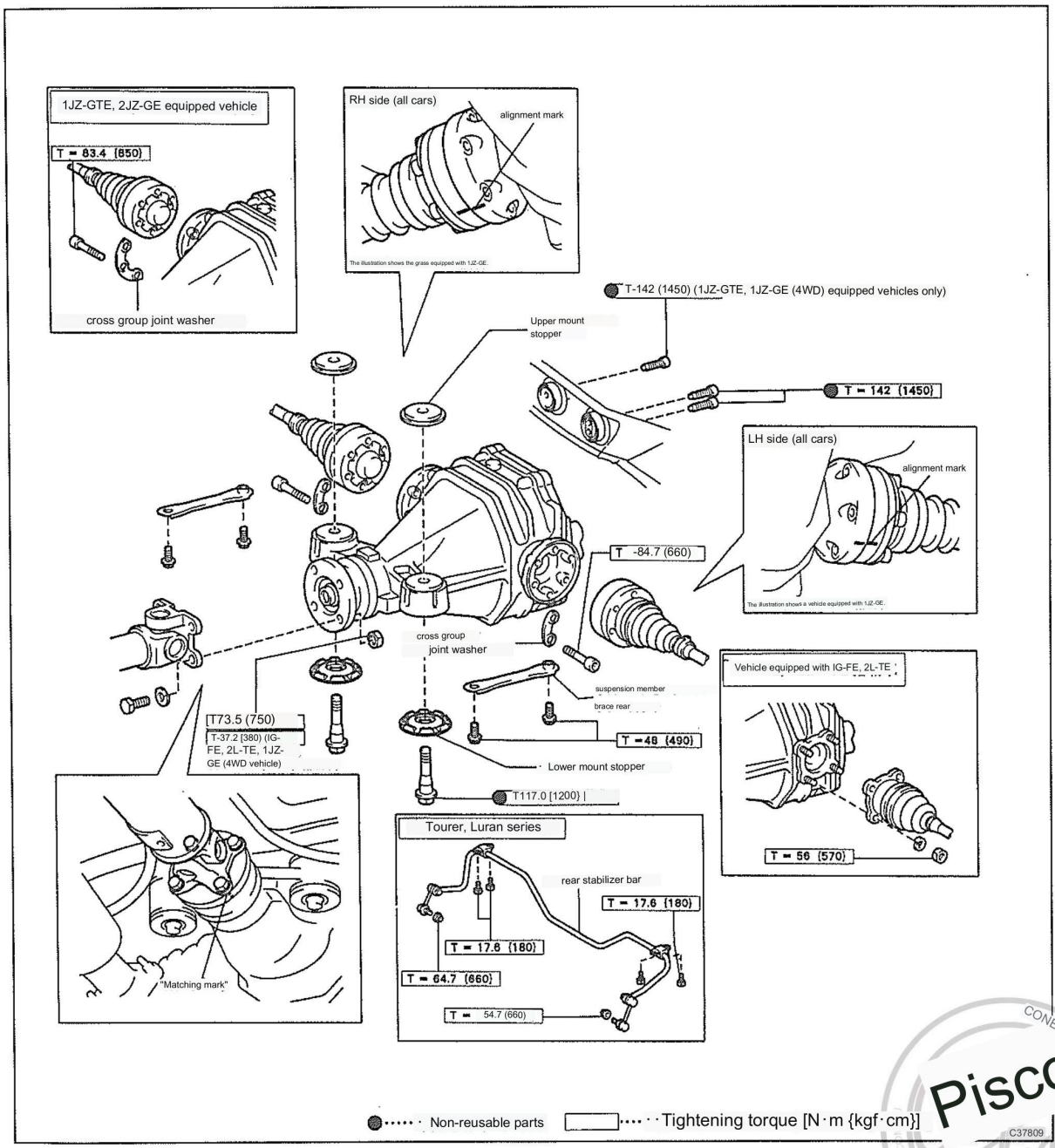
T0048891

Rear differential carrier ASSY

Detachment configuration diagram

- Suspend the propeller shaft so that excessive force is not applied to the propeller shaft
- joint. Be careful not to damage the drive shaft inboard joint end cover and boot. · Do not make alignment marks with the bonchi.



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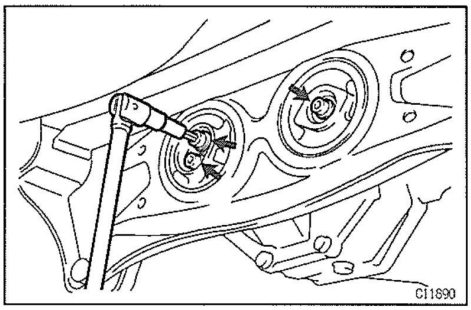

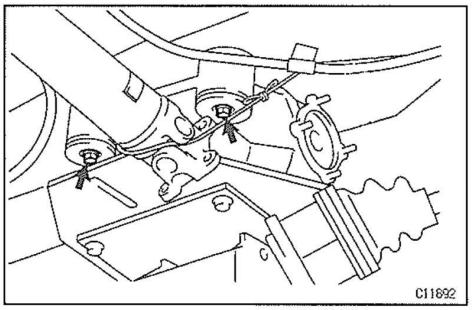

Rear differential carrier ASSY

Points to note during attachment/detachment work

1 Differential carrier ASSY removal and removal

(1) Support the differential carrier ASSY with a transmission jack.

注意 If the receiving surface of the jack is a companion flange or side gearsha

Avoid hitting the foot. (2)

Using socket hexagon wrench 12, attach the differential carrier ASSY to the rear differential mount cushion.

separate from

(3) Remove the rear differential mount lower stopper,

Remove the differential carrier ASSY from the vehicle. Note:

(Do 禁) not allow the differential carrier ASSY to interfere with the drive shaft.

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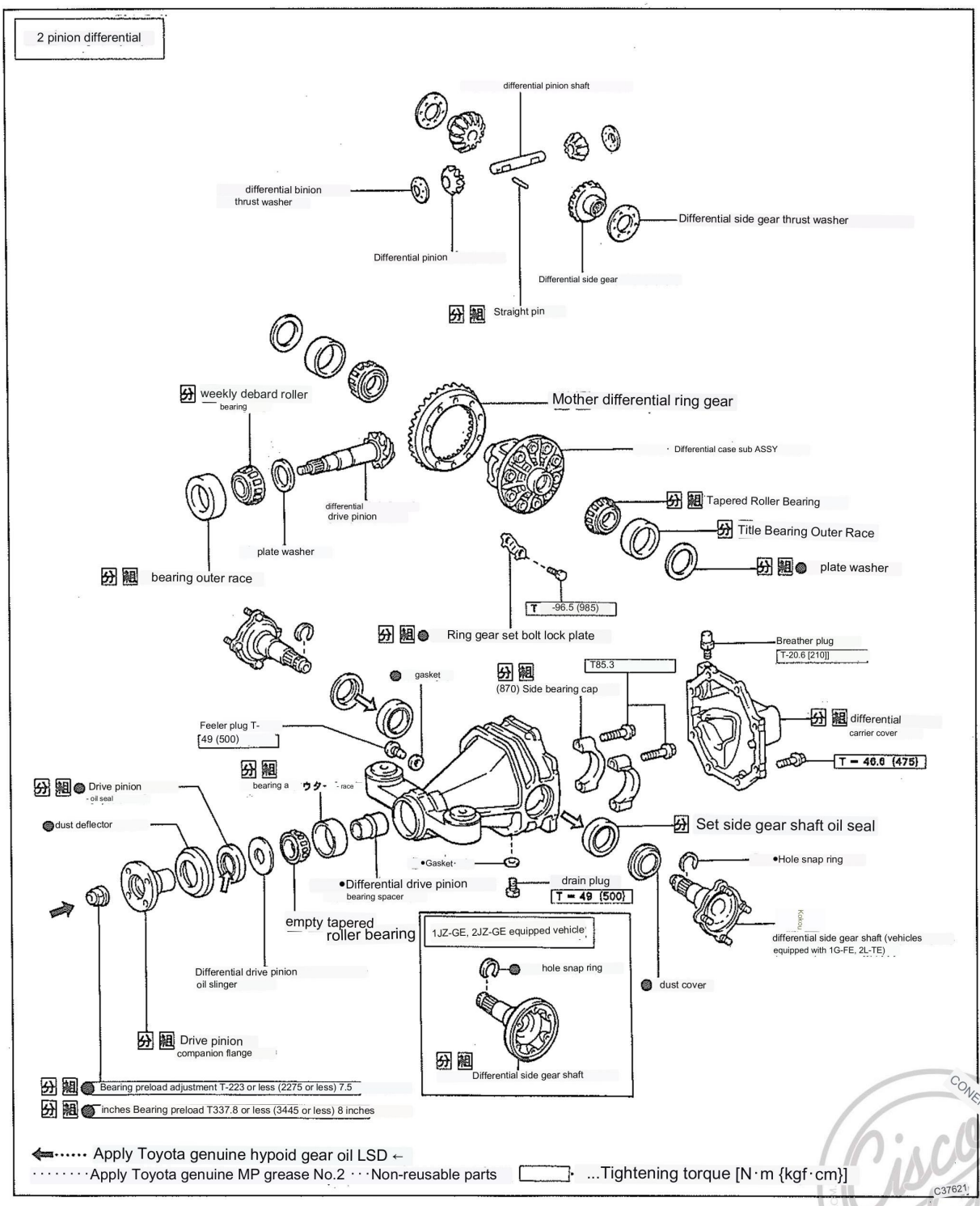
Exploded configuration diagram



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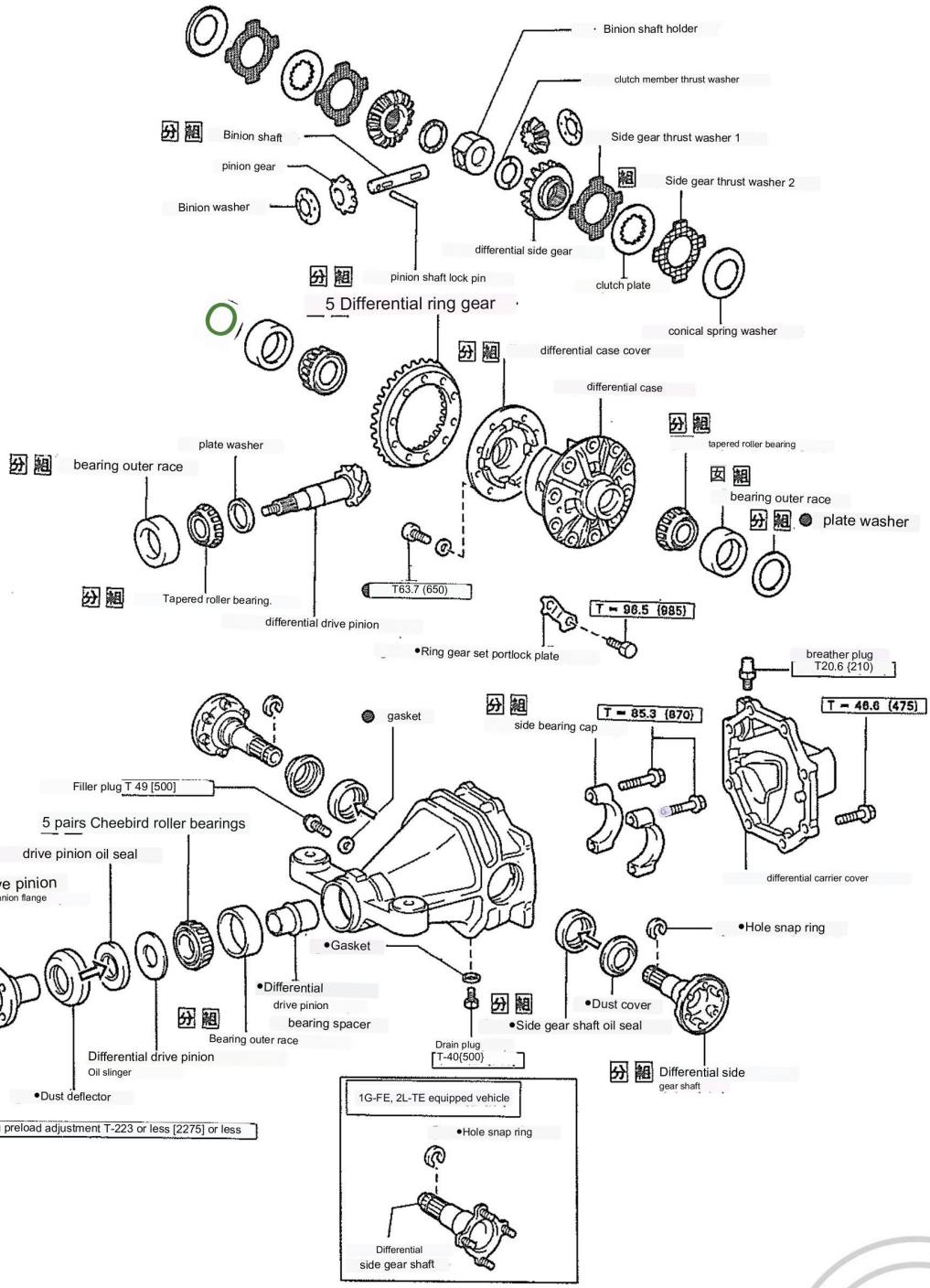
2 pinion LSD



◆...Apply Toyota genuine hypoid gear oil LSD...Apply Adhesive 1324 during reassembly...Apply
⇦Toyota genuine MP Grease No.2 ••••••Non-reusable parts □ · · · · Tightening torque [N·m {kgf·cm}]

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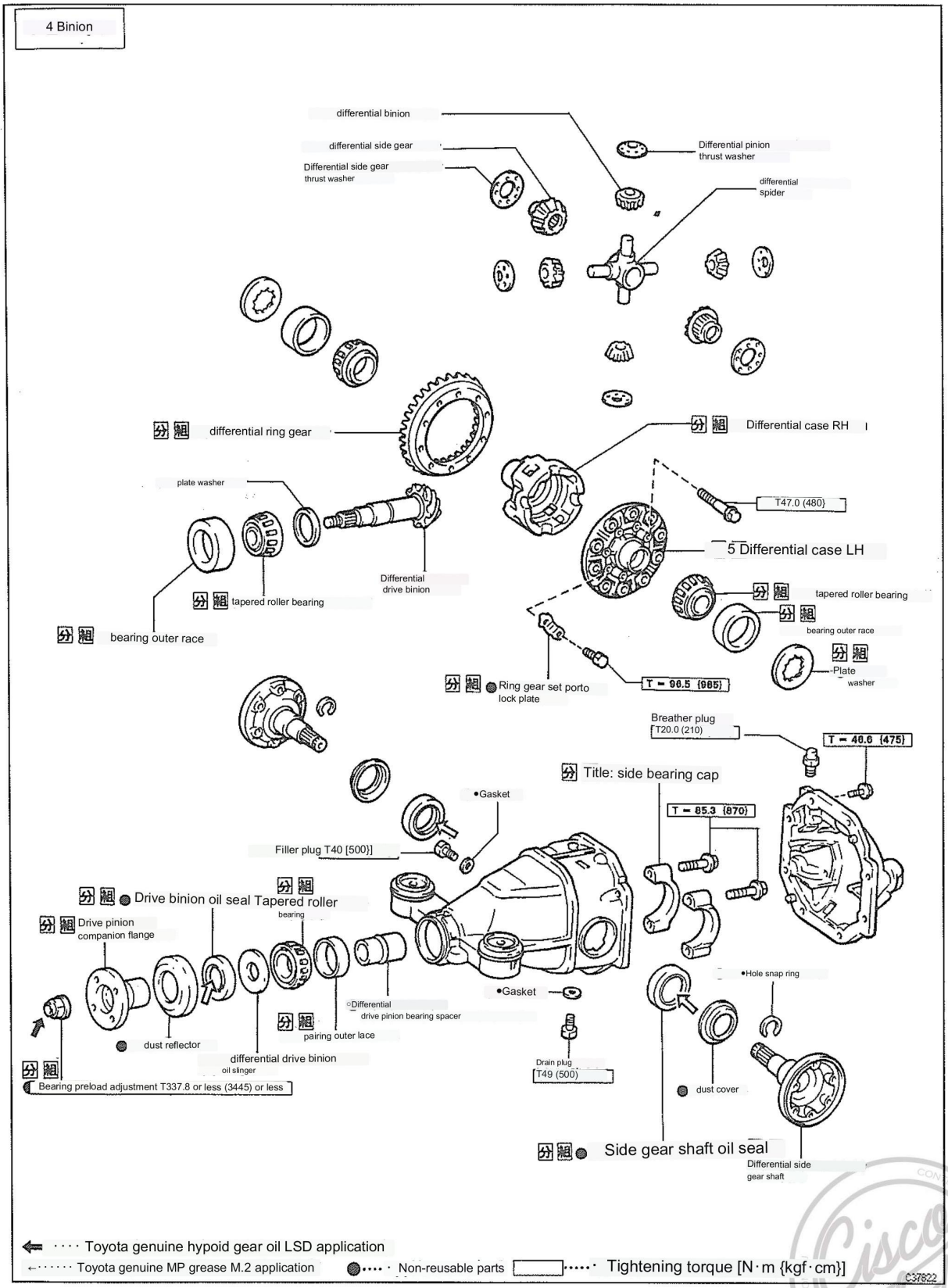

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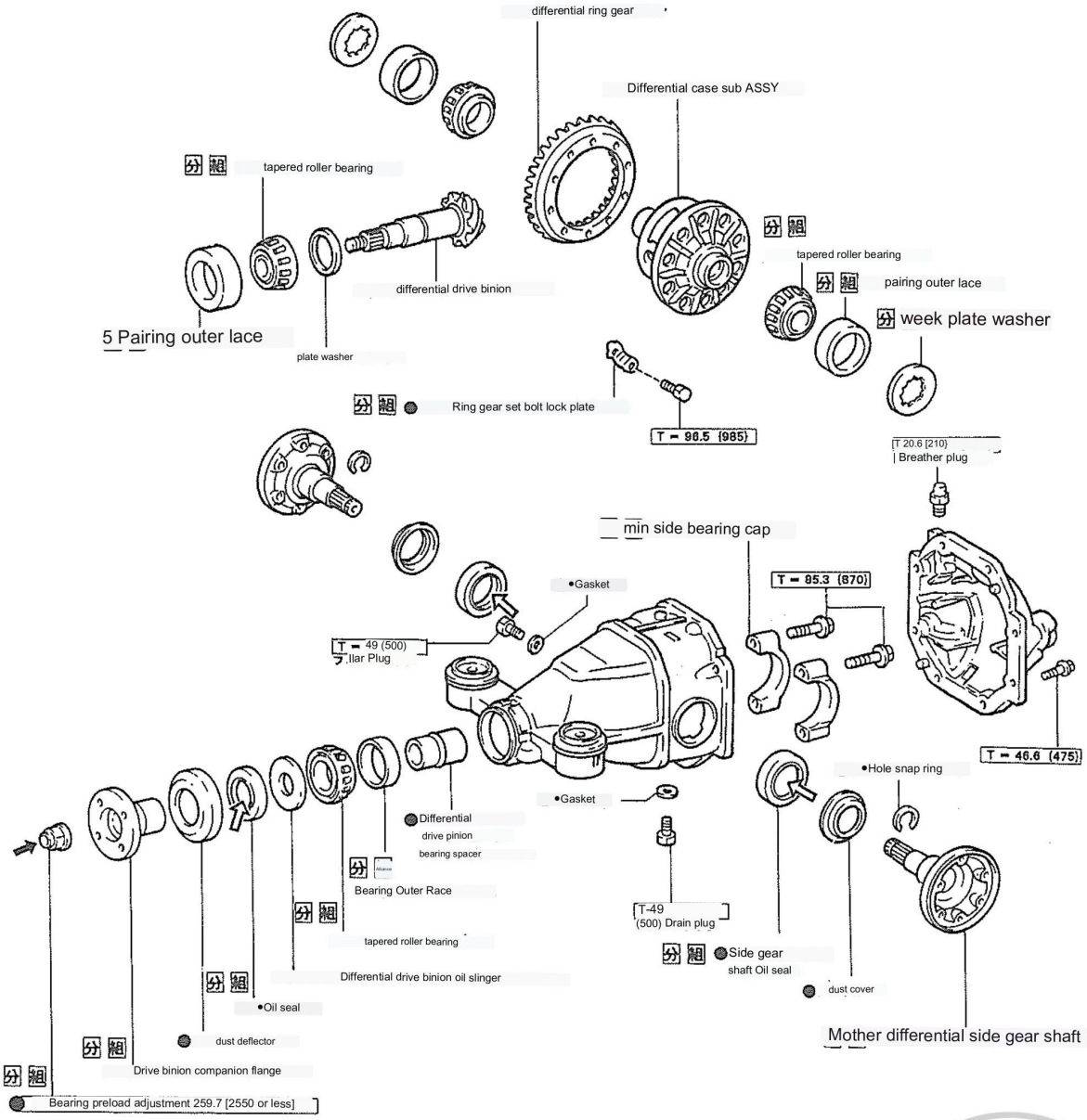
Torsen LSD



⇐····· Apply Toyota genuine hypoid gear oil LSD

←·····Apply Toyota genuine MP grease No.2 ·Non-reusable parts

□···· Tightening torque [N·m {kgf·cm}]

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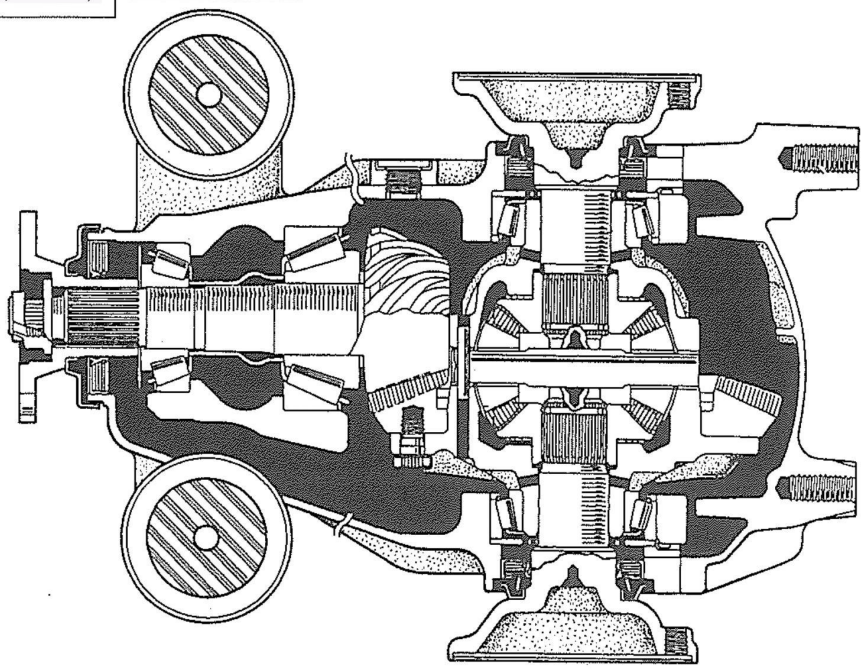
timesbox times house times

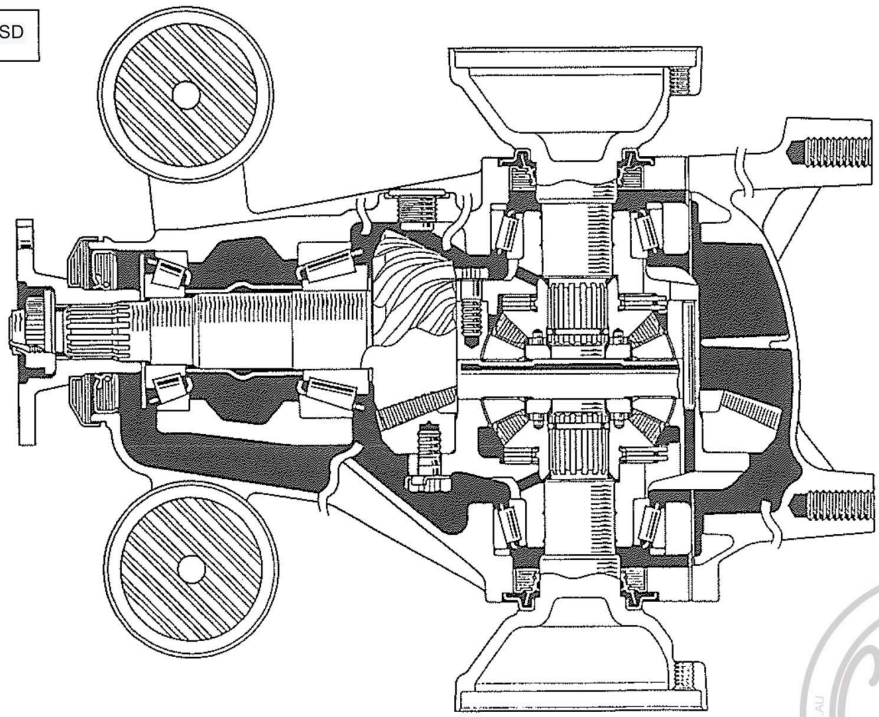
cross section

22 years old So (8 I> hand) (7.5 I right side pot selection trial open mind)



XD0455

2 2 years old > LSD



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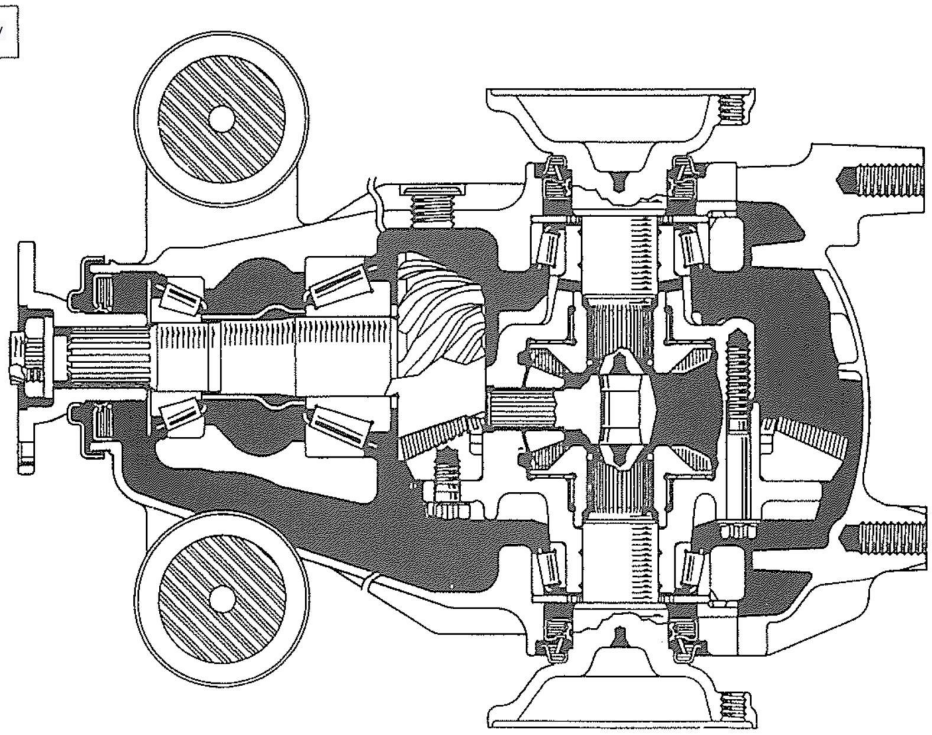
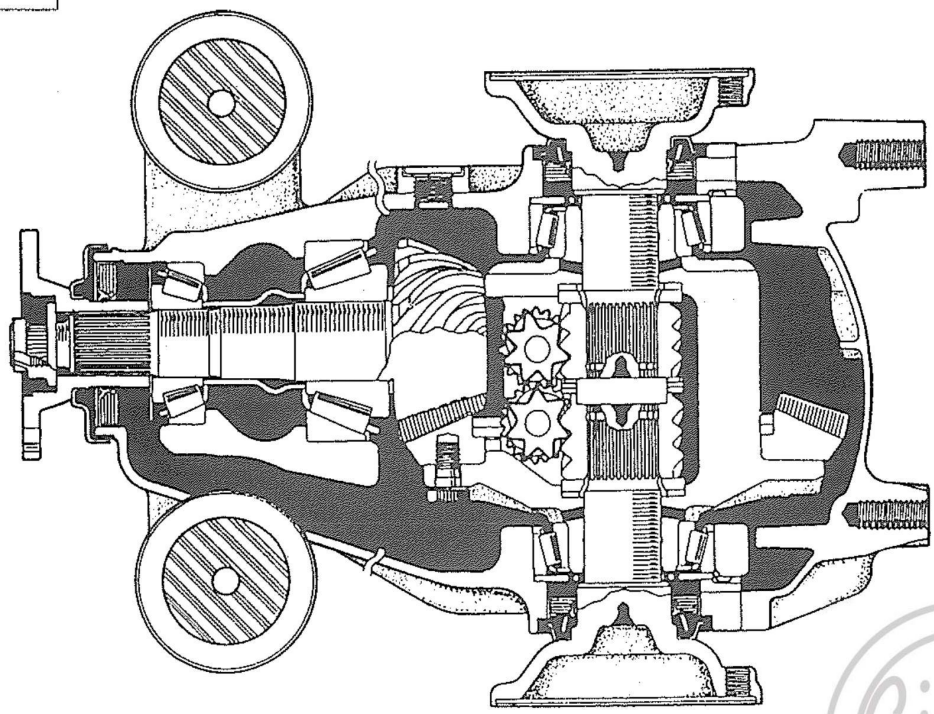
4-way two-way



C10340

トルク LSD



XD0458

C38604

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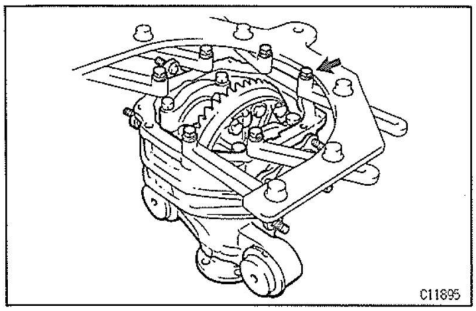


Rear differential carrier ASSY inspection (all vehicles)

<reference> Inspections 4 to 10 must be performed when disassembling a defective item.

1 Draining differential oil

2 Removing the differential carrier cover

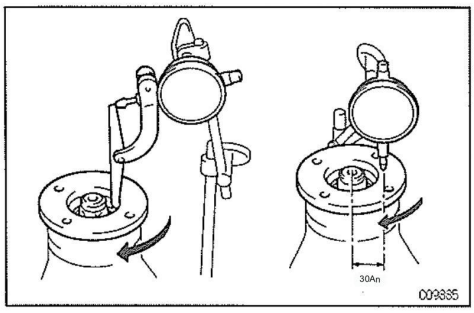
<Reference> Using a brass spar, tap lightly to remove the carrier cover.

Remove.

3 Differential carrier ASSY fixed

(1) Overhaul attachment of differential carrier ASSY

Fix it to the ment.



4 Companion flange runout inspection

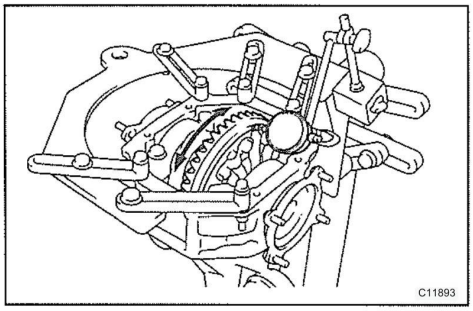
(1) Attach a dial gauge perpendicularly to the inner circumferential surface of the companion flange and measure the vertical runout of the companion flange.

Limit 0.09m

(2) Attach a dial gauge perpendicular to the companion flange surface and outside the bolt mounting hole to prevent lateral vibration of the companion flange.

Measure the

limit 0.09mm



5 Ring gear runout check

(1) Turn the companion flange to reduce the runout on the back of the ring gear.

Check with ear gauge.

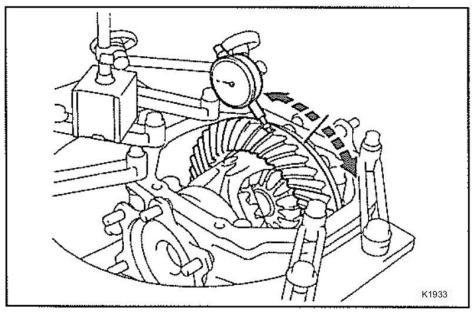
Limit 0.07 mm

If the limit value is exceeded, inspect the differential case for runout.

("Inspection and adjustment of rear differential components"

- Refer to "Inspection of differential case runout")

11



6 Ring gear backlash inspection

(1) Place the dial gauge perpendicularly to the tip of the tooth surface of the ring gear, fix the drive pinion, and move the ring gear to measure.

Standard value 0.13~0.18mm [Excluding 1JZ-GE (2WD) equipped vehicles]

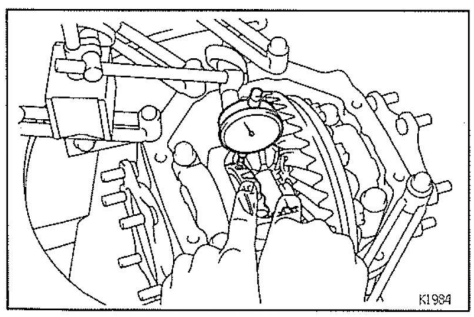
0.10~0.15mm [1JZ-GE (2WD) equipped vehicle]

Measure at three or more locations around the ring gear circumference.

7 Inspecting tooth contact between ring gear and drive pinion

("Rear differential carrier ASSY assembly"

— (See "Inspection of tooth contact between ring gear and drive pinion")



8 Side gear backlash inspection (excluding Torsen LSD)

(1) Place the dial gauge perpendicularly to the tip of the tooth surface of the side gear, fix the on side toward the differential case, and measure the backlash.

Standard value 0.05~0.20m

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9 Drive pinion preload measurement

(1) Using a torque wrench, measure the starting torque within the backlash range of the drive pinion and ring gear.

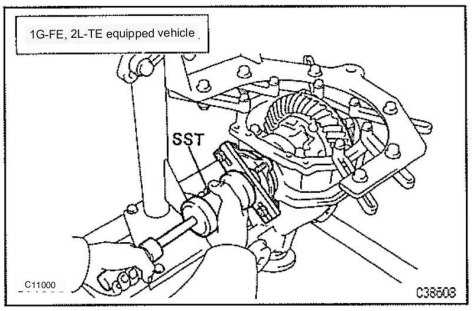
Standard value 7.5 inches 0.59~0.98N· m(6~10kgf· cm}

8 inch **0.59~0.88N•m {6~9kgf•cm}**

10 Comprehensive preload inspection

(1) Using a torque wrench, measure the starting torque with the drive pinion and ring gear tooth surface in contact.

Standards Comprehensive preload = Drive pinion preload +0.39~0.59N·m {4~6kgf·cm}



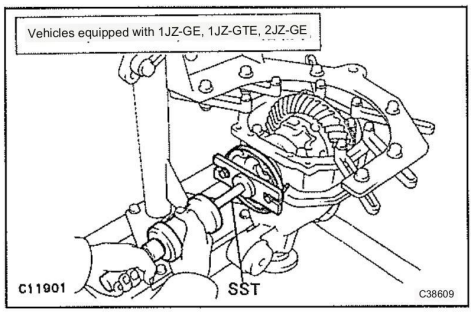
Rear differential carrier ASSY disassembly (all cars)

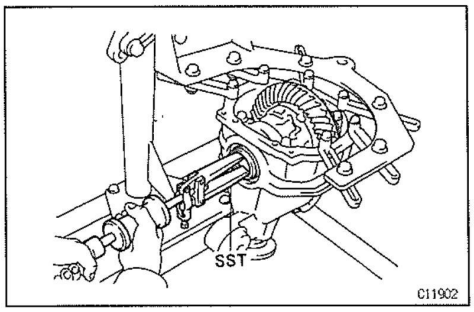
1 Side gear shaft removal

(1) Fix the SST to the side gear shaft and remove the side gear shaft from the differential carrier.

SST 09520-24010

(2) Use a screwdriver to remove the snap ring from the shaft.

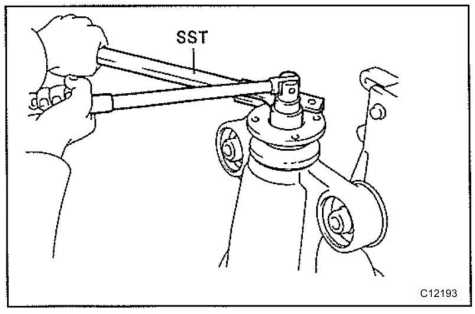




2 Side gear shaft oil seal removal

(1) Using SST, remove the oil seals (RH and LH). SST

09308-00010



3 Companion flange removal

(1) Unscrew the nut using a chisel. (2)

Use SST to secure the flange and remove the nut.

S S T 09330-00021

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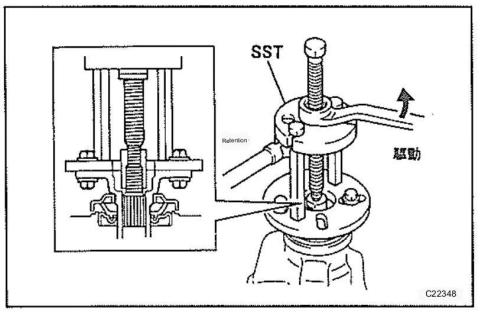
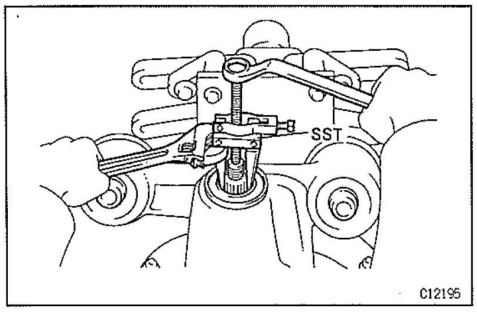


(3) Remove the companion flange using SST.

SST 09951-03010 09953-03010 09954-03010
09955-03030 09956-03020 (7.5 inch)
09956-03030 (8 inches)

[Caution] Apply oil or fat to the threaded part of the SST center bolt (09953-03010) before use.

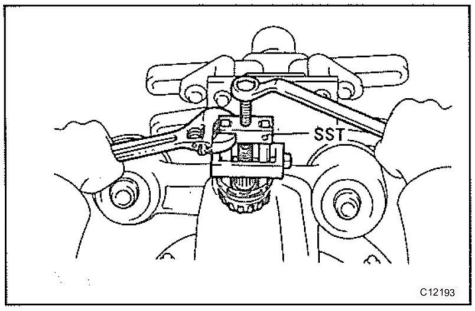


4 Drive pinion oil seal removal

(1) Using SST, remove the oil seal from the differential carrier.

S S T 09308-10010

5 Drive pinion oil slinger removal



6 Tapered roller bearing (front bearing) removal

(1) Using SST, remove the tapered roller bearing from the differential carrier. SST

09556-22010

7 Removing the bearing spacer

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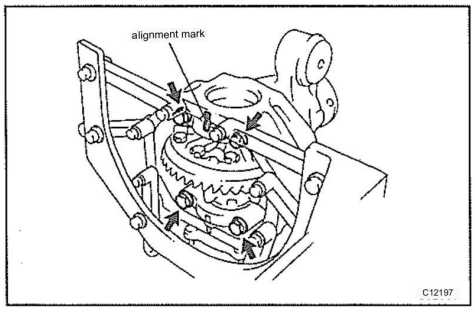


8 Differential case ASSY removal

(1) Match the bearing cap and differential carrier. Mark.

(2) Remove 4 bolts and 2 bearing caps.

vinegar.

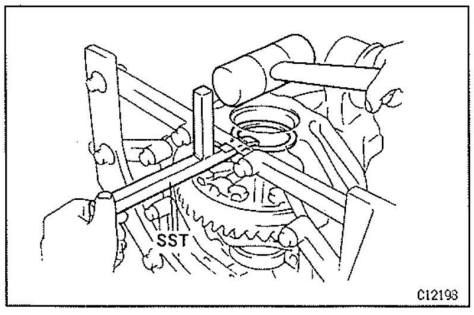
Bearing cap and carrier are machined as one piece Do not change the combination. (3) Using SST, plate washer (for backlash adjustment) Remove.

SST 09504-22011

(4) Differential case with bearing outer race Remove it.

For bearings and ring gear differential carriers Don't let it interfere.

- Identification of left and right (back side, tooth side) on bearing outer race Mark or organize separately.



9 Drive pinion removal

(1) Remove the drive pinion from the differential carrier

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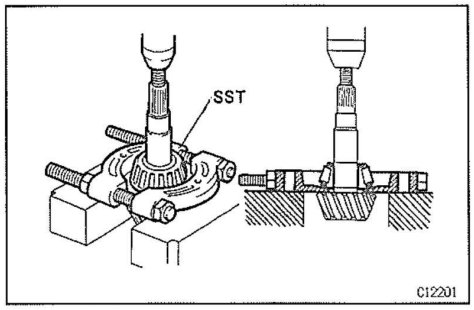


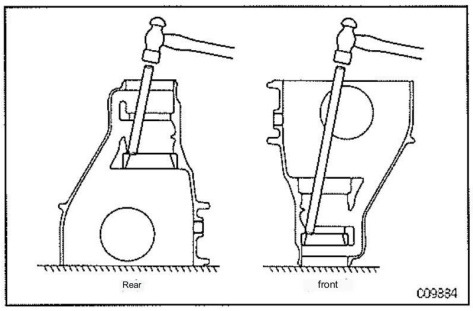
10 Removing the drive pinion rear bearing (1)

Using SST and a press, remove the rear bearing from the drive pinion.

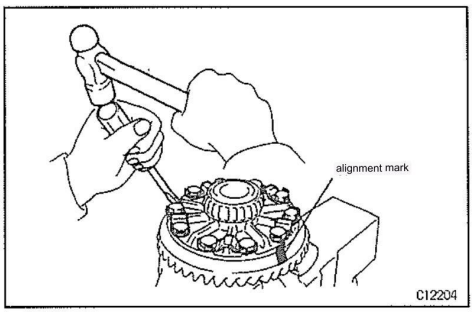
Remove the ring.

S S T 09950-00020

(2) Remove the plate washer.



11 Front and rear drive pinion bearing outer race removal (1) Using a brass bar, punch out the bearing outer race by tapping it lightly and evenly.



12 Ring gear removal

(1) Place alignment marks on the differential case and ring gear.

Ru.

(2) Unscrew the lock plate using a screwdriver. (3) Remove 10 bolts and 5 lock plates. (4) Using a plastic hammer, lightly tap the outer periphery of the ring gear. and remove it.

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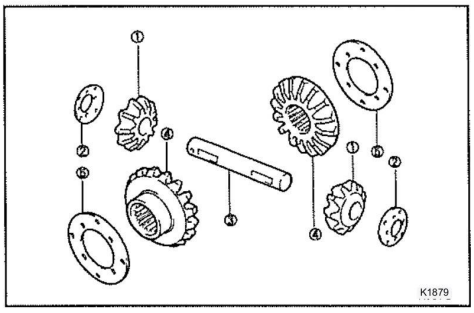
Inspection and adjustment of rear differential components

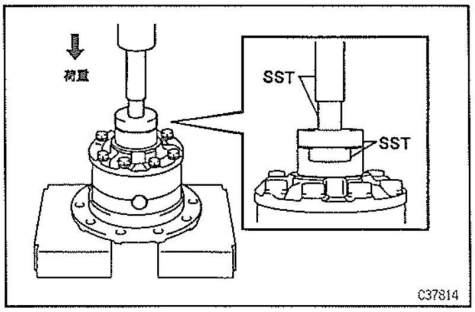


1 Differential case disassembly (by type)

2 on

(1) Punch out a straight pin using a pin punch.

(2) Remove the following parts from the differential case. ① 2 differential pinions ② 2 pinion thrust washers ③ Differential pinion shaft ④ 2 differential side gears ⑤ 2 side gear thrust washers



2 pinion LSD

(1) Place matching marks on the differential case and differential case cover.

(2) Using SST and a press, apply a load of 1180N {120kgf} differential case car NTENT UPLO bar side. SST

09951-00330 09951-00500 09951-07100 09952-06010

Ciste

(3) Remove the 8 bolts.

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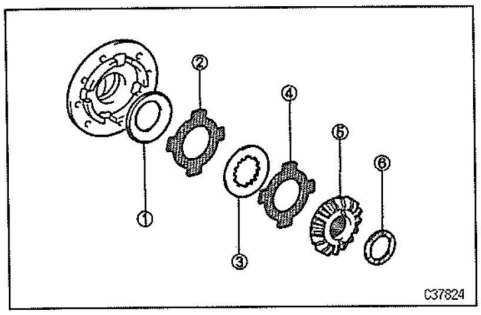

(4) Remove the following parts from the differential case. ① Conical spring washer ② Side gear thrust washer No.2 RH ③ Clutch plate RH ④Side gear thrust washer No.1 RH ⑤ Differential side gear RH ⑥ Clutch member thrust washer RH

(Five) Using a pin punch, remove the pinion shaft lock pin.

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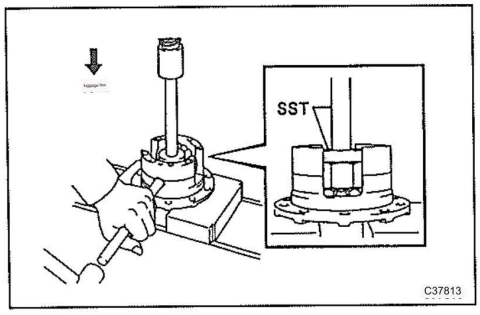
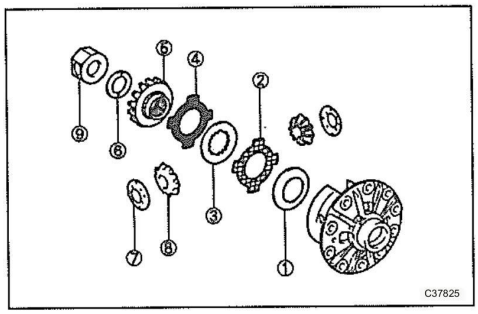


(6) Using SST and press, into pinion shaft holder Apply a load of 1180N {120kgf}.

SST 09951-00500 09951-07100

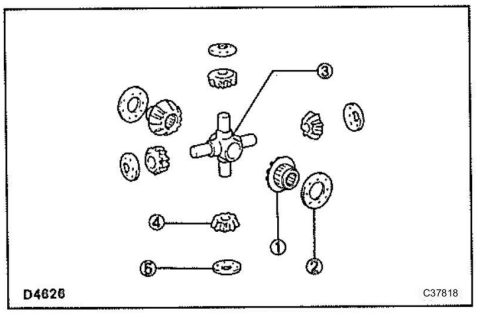
(7) Using brass spar and hammer, differential Remove the pinion shaft from the case.



(8) Remove the following parts from the differential case. ① Conical spring washer LH ② Side gear thrust washer No.2 LH ③ Clutch plate LH ④ Side gear thrust washer No.1 LH ⑤ Differential side gear LH ⑥ Clutch member thrust washer LH ⑦ 2 pinion washers ⑧ 2 pinion gears ⑨ Pinion shaft holder

11

4 pinion



(1) Differential case RH and differential case Place an alignment mark on LH.

(2) Remove the 8 bolts. (3) Connect the RH and LH sides of the differential case to plastic Remove the mating using a hammer, etc.

(4) Remove the following parts from the differential case. ① Differential side gear 2 pieces ② Side gear thrust washers 2 pieces ③ Differential spider ④ Differential binion 4 pieces ⑤ Pinion thrust washers 4 pieces

Torsen LSD

Note The differential case is non-disassembly.

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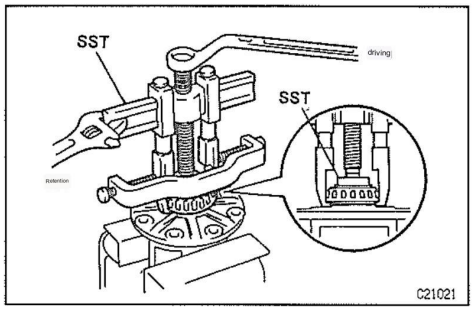
2 side gear and pinion gear wear inspection
(Excluding Torcen LSD)
3 Presence or absence of cracks and damage of differential cases
(hereinafter all cars)

4 Shake inspection of a differential case
<Reference> Do it only when the limit is exceeded by the ring gear swing inspection.
(1) Differential case is assembled into a differential
calorie and a bearing cap is assembled.
(Refer to "Re -Differential Cari ASSY Assembly"
- "Side Bearing Preload Adjustment")
(2) Inspect the swing of a differential case.
Limit 0.07mm
(3) Remove the differential case.
("Rear Differential Caliya ASSY Decomposition"
- "Differential case ASSY removal")



5 Taper drawer bearing (side bearing) should be taken
death
(1) Bearing in from the cut -off part of the differential case
Put SST claws on the nerel race.
(2) Use SST to tapered from a differential case
Remove two roller bearings.

S S T	09951-04020	09952-04010	09953-04030
	09954-04010	09955-04060	09957-04010
	09958-04010		

Note · SST center bolt (09953-04030) Applied and
tip of fats and oils to use and use.
• Do not deform the bearing cage.
<Reference> When replacing the taper drawer bearing (side bearing)
Other than that, I will not take it off.

11

T0045692
Rear Diadial Caliya Assembly Assembly

1 Differential case assembly (by type)
2 pinion

Note · When assembling a thrust washer, side gear, pinion, etc., confirm that there is no adhesion such as garbage, slot, etc. · Sufficiently apply high pooid gear oil SX to each sliding part and rotation part do.
(1) Assemble a thrust washer on the side gear.
(2) Side gear (with washer), pinion gear, pinion shaf
Assemble the pinion thrust washer. [Match the hole
in the fixing of the gathering vinion shaft and the hole in the case.

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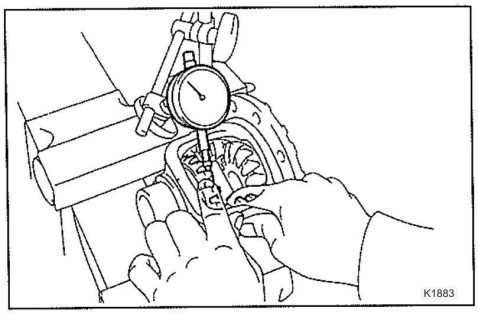
times



(3) Select and adjust thrust washers of the same size on both the left and right sides from the following items so that the backlash of the side gear is within the standard value and rotates smoothly.

Secure the pinion toward the differential case and check for backlash. Standard

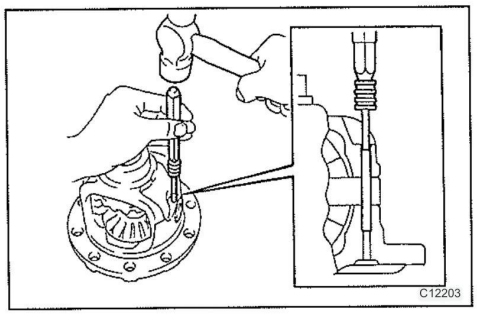
0.05–0.20mm 値

7.5 inches	
product 番	Thickness (mm)
41361 — 30040	0.96 1.04
41361 — 30050	1.06 1.14
41361 — 30060	1.16 1.24
41361 — 30070	1.26 1.34

<Reference> Types of thrust washers

8 inch	
product 番	Thickness (mm)
41361 — 40021	1.58 1.62
41362 — 40021	1.68 1.72
41363 — 40021	1.78 1.82

JA2483



(4) Using a pin punch and hammer, remove the straight pin.

Drive from the tooth surface side of the gear. (5) Using a chisel and hammer, open the differential case.

Caulk the outer circumference of the pin hole.

2 pinion LSD

(note 5)

· Clean each disassembled part and remove cracks, wear damage, and deformation of each joint 11 and if there are any problems such as burn-in, fix or replace. do.·

When replacing the pinion shaft holder, differential side gear, or clutch plate, remove the slider that comes in contact with it. Replace the washer with a new one.

- When measuring each dimension using a micrometer, measure it three times, and if even one of the measurements shows a significantly different value, take the measurement again.
- Clean the differential case, case cover, and bolts using white gasoline, etc., and blow dry with air.· Apply hypoid gear oil LSD to sliding surfaces and rotating parts before assembly.
- When assembling the component parts without replacing them, do not change the position or direction of the side gear, side gear thrust washer, clutch plate, and conical spring as they were installed when disassembled.

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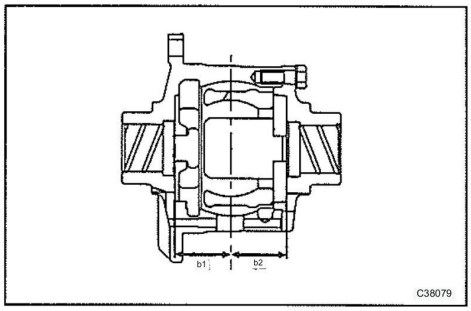
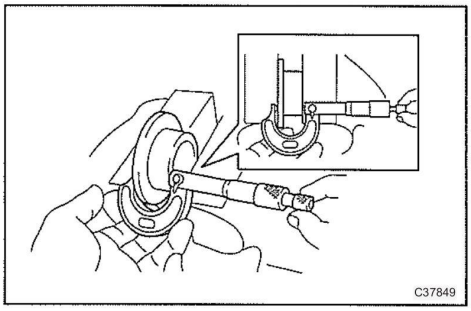


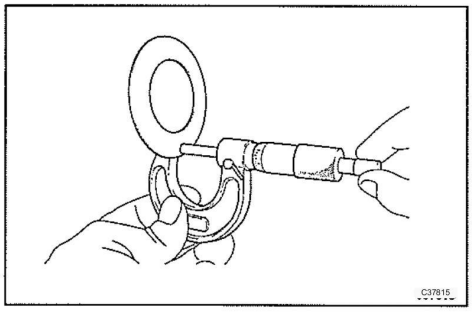
{1b1,b2 Dimensions are classified as shown in the table, and symbols A to F are stamped on them, which also serve as alignment marks for the differential case and differential case cover.

classification Tekin	b1b2 dimensions (mm)
A.	38.05~38.07
B.	38.08~38.10
C.	38.11~38.13
D.	38.14 38.16
E.	38.17~38.19
F	38.20

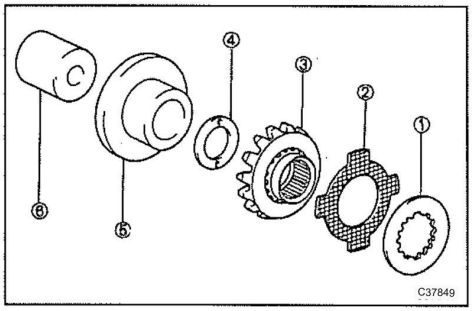


(2) Measure the dimension of SST three times using a micrometer, and let S be the average value.

S S T 09316-00031



(3) Using a micrometer, measure the outer circumference of the conical spring by 3 Measure twice and let the average value be T.



(4) Use SST to combine the following parts.

①Clutch plate

②Side gear thrust washer No.1

③Differential side gear

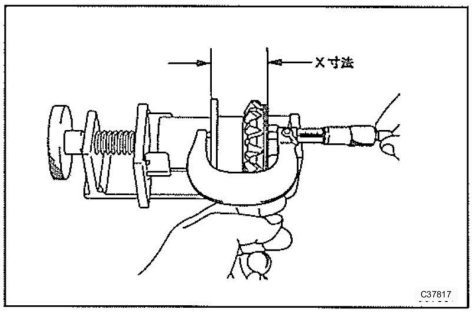
④Clutch member thrust washer

⑤ SST 09316-00031

⑥ SST 09710-01031

S S T 09316-00031 09411-22012 09710-01031

注意 Assemble the clutch member thrust washer so that the side without oil groove is in contact with the differential side gear.



(5) Loosen the SST nut and use the spring to hold it in place.

(6) Center the parts to be measured (① to ⑤) sufficiently and measure them three times using a micrometer, and let the average value be X.

CAUTION Measure the RH side and LH side. (7) Find dimension a as follows.

a Dimensions (mm)=X-S+T+2.5(mm)

Note Measure the RH and LH sides.

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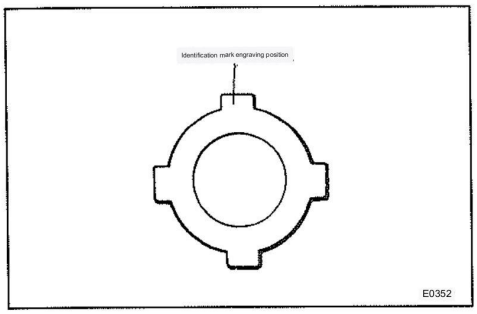

(8) From the combination of b1 dimensions and dimensions (LH side) and b2 dimensions and dimensions (RH side), select side gear thrust washer No. 2 using the selection table.

Product number	Identifying mark	Plate thickness (mm)
41361-30120	A.	1.77 1.83
41361-30130	B.	1.83~1.89
41361-30140	C.	1.89 1.95
41361-30150	D.	1.95~2.01
41361-30160	E.	2.01~2.07
41361-30170	F	2.07 2.13
41361-30180	G.	2.13 ~2.19
41361-30190	H	2.19~2.25
41361-30200	J.	2.25~2.31

・ Side gear thrust washer No.2 selection table [mm]

Tekin No. / b1 and b2 dimensions / a dimension	A.	B.	C.	D.	E.	F
	38.05 38.07	38.08 38.10	38.11 38.13	38.14 38.16	38.17 38.19	38.20
23.25 23.26						Ⓙ
23.27 23.29					Ⓗ	
23.30 23.32						
23.33 23.35					Ⓖ	
23.36 23.38				Ⓕ		
23.39 23.41						
23.42 23.44				Ⓔ		
23.45 23.47			Ⓓ			
23.48 23.50						
23.51 23.53			Ⓒ			
23.54 23.56		Ⓑ				
23.57 23.59						
23.60 23.62	Ⓐ					
23.63 23.64						

Note: The alphabetical character inside the circle is the identification mark for side gear thrust washer No.2. indicates

JB3277

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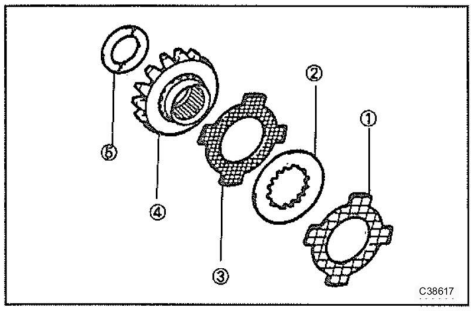

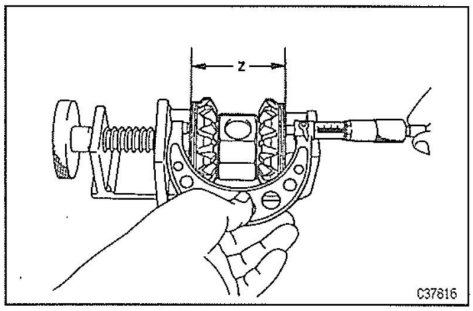

(9) Combine the following parts.

①Selected side gear thrust washer No.2

②Clutch plate

③ Side gear thrust washer No.1

④ Differential side gear

⑤ Clutch member thrust washer

注意 · Each side gear thrust washer No. 2 selected should be installed in the oil groove pit.

Assemble so that the small side of the chi is in contact with the clutch plate.

Ru.

· Combine the RH side and LH side.

(10) Using SST, each part and pinion shaft assembled in (9)

Keep folders.

SST 09411-22012

(11) After centering the measurement part sufficiently, insert the micrometer.

Measure three times and take the average value as

Z. (12) Find the C dimension as follows.

Standard C dimension (mm) -Z+T (RH side) +T

(LH side) (mm) (13) Differential case and differential case cover

Find b1+b2 from the table below based on the combination of marking symbols on the bar, and check whether the relationship with the C dimension above meets the standard value.

Standard value b1+b2 (mm) NC(mm)

Note If C dimension is large, use side gear thrust washer No.2

Check the plate thickness of the side gear thrust washer No. 2 according to the selection table.

Then, reselect both the RH side and LH side, measure the C dimension again, and make a judgment.

I do.

differential case, differential case cover Tekin combination	b1+b2(mm)
A+A	76.10
A+B	76.13
A+C	76.16
A+D	76.19
A+E	76.22
A+F	76.25
B+B	76.16
B+C	76.19
B+D	76.22
B+E	76.25
B+F	76.28
C+C	76.22
C+D	76.25
C+E	76.28
C+F	76.31
D+D	76.28
D+E	76.31
D+F	76,34
E+E	76.34
E+F	76.37
F+F	76.40

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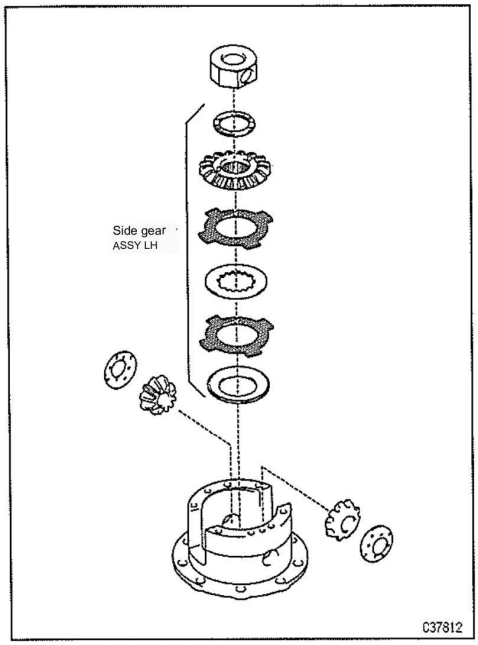

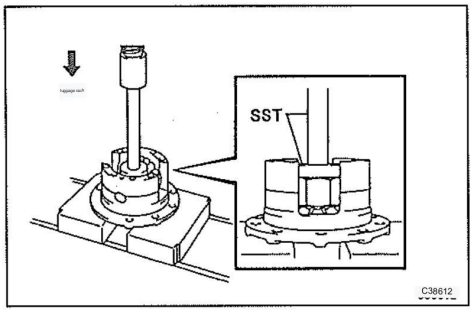

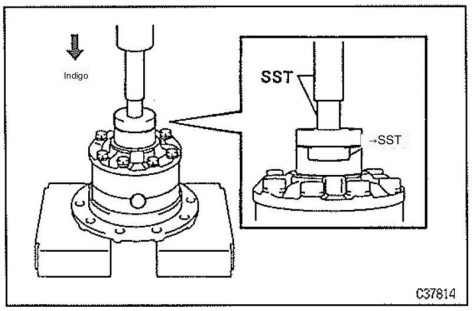

(14) Assemble the side gear ASSY LH to the differential case.

Connect the convex surface of the conical spring washer to the differential. Place it on the case side.

(15) Assemble the two pinion gears and two pinion washers by aligning them with the pinion shaft holes.

(16) Assemble the pinion shaft holder in the direction that the pinion shaft assembly hole and pinion gear inner diameter match.

(17) After centering each part thoroughly, apply a load of 1180N {120kgf} to the pinion shaft holder using SST and a press. put on.

(18) Insert the pinion shaft.

Caution Align the hole for the binion shaft stop pin with the stop pin hole on the differential case.

(19) Insert the pinion shaft lock pin.

(20) Release the load on the pinion shaft holder. (21) Assemble the side gear ASSY RH to the differential case cover.

•Caution: Make sure to mesh the side gear and pinion gear correctly.

(22) Assemble the side gear ASSY RH to the differential case cover. Once installed, attach it to the differential case. The clutch member thrust washer comes off the fixing pin. Make sure not to.

(3) Use SST and press to connect differential case and Apply a load so that the differential case cover fits tightly, and tighten the 8 bolts. SST

09951-00330 09951-00500 09951-07100 09952-06010

Do not release the press load until the bolts are tightened.· When assembling, apply Adhesive 1324 to the bolt threads.· Make sure the side gear thrust washer does not get wedged in the differential case.

(24) After tightening the bolts, leave them for more than 3

hours. Note: If the environmental temperature is below 15℃, heat it to 30~50℃ and then leave it.

(25) Using the side gear shaft with the snap ring removed, fix the side gear on one side, and check that the side gear on the other side rotates smoothly.

11

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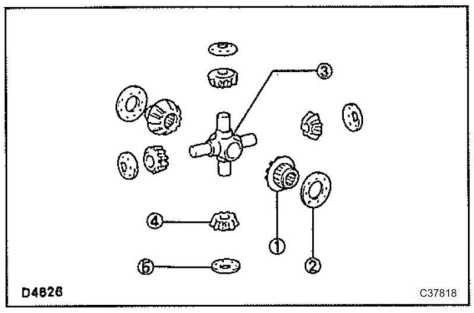
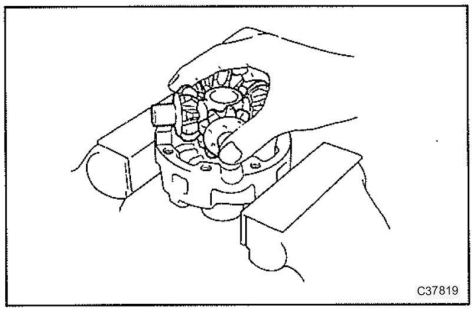
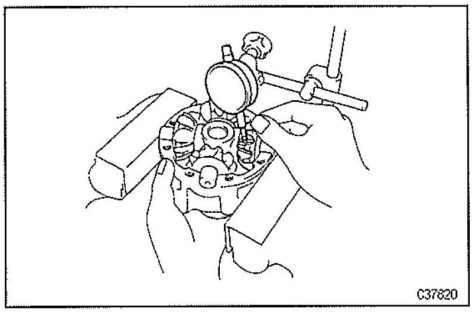


4 pinion

(1) Assemble the thrust washer to the side gear. (2) Assemble 4 pinions and 4 thrust washers to the spider.



(3) Assemble the spider ASSY to the differential case RH.



(4) Fix the side gear and check the side gear backlash on the differential case RH side on the pinion side.

Standard value 0.05~0.20mm

•Caution) Inspect the pinion by pressing it against the differential case.

Ru.

(5) Side gear, pinion and and spider, and perform the work in (4).

(6) If the backlash is outside the standard value, select thrust washers for both left and right sides from the table to bring the backlash within the standard value.

<Reference> Types of thrust washers

part number	Plate thickness (mm)
41361-24010	0.88~0.92
41361-24020	0.98~1.02
41361-24030	1.08~1.12
41361-24040	1.18 1.22
41361-24050	1.28~1.32

(7) Set the alignment mark on the right side of the differential case to the left side. Align with the alignment marks and assemble so that the teeth of the differential pinion and side gear mesh.

(8) Using a plastic hammer, differential case Tap lightly to mate.

(9) Tighten the 8 bolts to the specified torque.

Tighten the bolts diagonally in several steps.

11

Congratulations times

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Torsen LSD

Caution The differential case does not need to be assembled as it cannot be disassembled.

death.

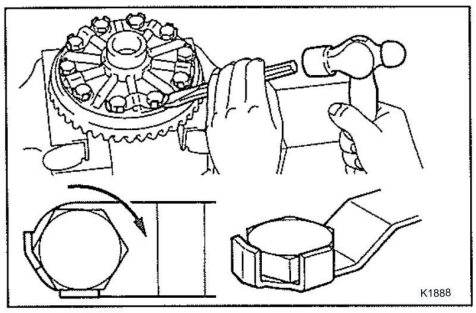
2 Ring gear assembly (all cars below)

(1) Heat the ring gear to 100℃ with boiling water.

注意 Do not heat the ring gear above 100℃.

(2) Oil and water on the mating surfaces of the ring gear and differential case thoroughly clean the area

(3) Align the alignment marks on the differential case and ring gear.



せて, Assemble the ring gear quickly.

Caution Align the bolt holes on the differential case with the screw holes on the ring gear.

(4) Tighten the 10 set bolts to the specified torque using the 5 new lock plates.

Caution Tighten the bolts in diagonal order and in several batches.

け Ru.

(5) Use a chisel to raise the claw on the lock plate to prevent it from rotating.

do.

Notes The tab that contacts the width across flats of the bolt should be tightened until it comes into close contact with the width across flats.

to bend. In addition, the claw part will contact the crest of the bolt for 2 minutes.

If this is the case, make sure the tightening side of the bolt is in close contact.

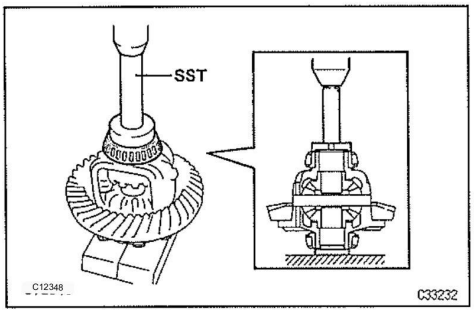
3 Tapered roller bearing (side bearing) assembly

(1) Using SST and press, attach to differential case

Press in the tapered roller bearing. SST

09252-10010 09557-10010 09558-10010

(09316-00010 (8 inches) ・



注意 Align the SST with the center of the differential case.

・ When replacing the bearing, also replace the bearing outer race.

11

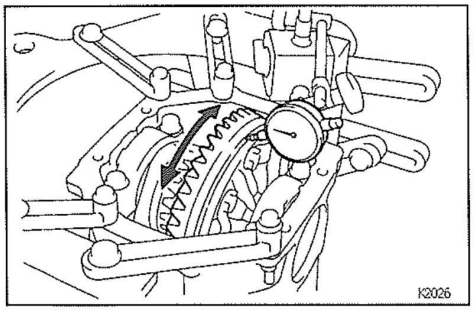
4 Ring gear runout check

(1) Attach the differential case to the carrier and

Attach the plate washer so that there is no play.

("Rear differential carrier ASSY assembly"

- See "Ring gear backlash adjustment")



注意 Assemble the left and right bearing outer races, being careful not to confuse them.

(2) Assemble the bearing cap.

("Rear differential carrier ASSY assembly"

- Refer to "Side Bearing Preload Adjustment")

(3) Check the runout on the back of the ring gear using a dial gauge.

Limit 0.07mm

(4) Remove the differential case. (Refer

to "Rear differential carrier ASSY disassembly"

— and "Differential carrier ASSY removal")

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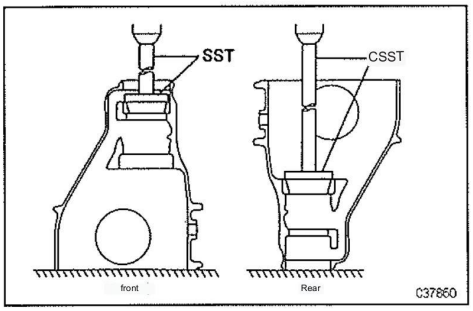
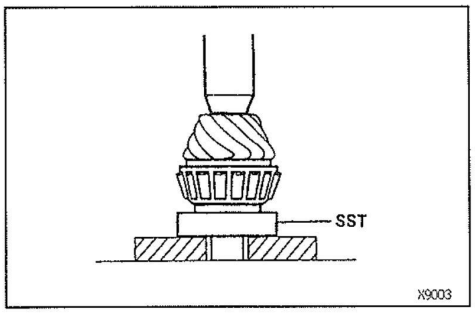


5 Front and rear drive pinion bearing outer lace assembly

(1) Press the bearing outer race using SST and a press.

Enter.

S S T	09951-00720	09951-07200	Front
	09951-00790	09951-07200	rear 7.5 inch
	09951-00890	09951-07200	Rear 8 inch



6 Tapered roller inner bearing (rear bearing) assembly (1)

Assemble

the plate washer to the drive pinion. <Reference>

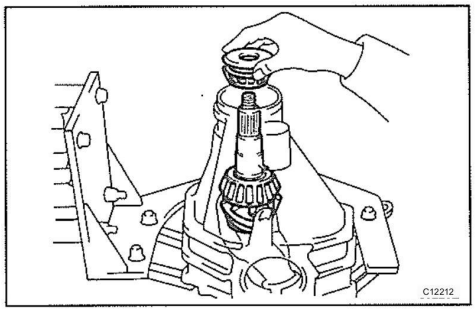
Assemble the washer with the same thickness as before removing it.

Ku.

(2) Using SST and press, drive pinion tapered SST

Press fit the roller inner bearing.

09506-30012

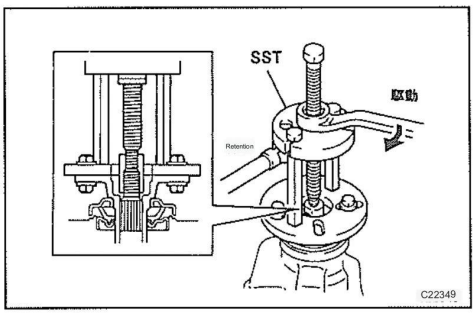


7 Drive pinion preload temporary adjustment

(1) Differential carrier with drive pinion, tapered roller inner bearing (front bearing) and driver

Assemble the Eve pinion oil slinger. To check

注意 the ring gear contact, do not install the spacer and oil seal, but install after checking and adjusting the tooth contact.

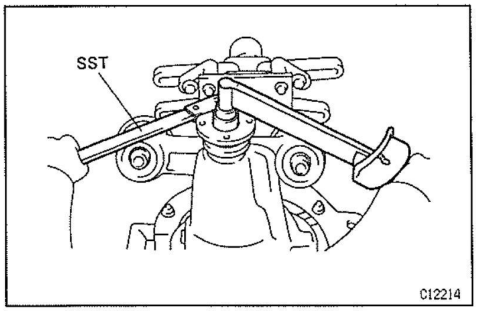


(2) Install the companion flange using SST. SST

09951-03010	09953-03010	09954-03010	09955-03030
	09956-03020	(7.5 inch)	
	09956-03030 (8 inch)		

注意 • Since the spacer is not installed, tighten the companion flange until there is some play in the drive pinion.·

Apply oil to the thread and tip of the SST center bolt (09953-06010).



(3) Using SST, gradually tighten the new nut using the plate washer to the specified preload. SST

09330-00021

注意 • Apply hypoid gear oil LSD to the nut and drive pinion threads.

· Since there is no spacer included, tighten the nuts little by little and never overtighten.

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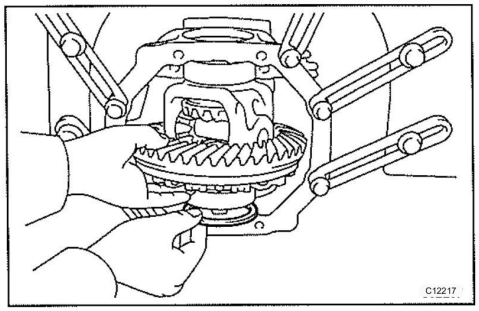
(4) Measure the starting torque of the drive pinion.

Reference value

	7.5 inches	8 inch
When the bearing is new	1.08～1.76N•m {11～18kgf•cm}	0.98～1.57N•m {10～16kgf•cm}
When reusing bearings	0.49～0.88N•m {5～9kgf•cm}	0.49～0.78N•m {5～8kgf•cm}

Note • To adjust the bearing, perform forward and reverse rotation several times before measuring.· Memorize the preload for comprehensive preload measurement.



8 Differential case assembly

(1) Left and right bearing outer of tapered roller bearing

Assemble the laces without making mistakes.

(2) Assemble the differential case to the carrier.

9 Ring gear backlash adjustment

(1) The backlash of the ring gear is almost at the standard value on the back side of the ring gear.

Insert the plate washer that fits inside the plate washer described in the next section.

Select from the shear list and install.

Standard value 0.13~0.18mm [Excluding 1JZ-GE (2WD) equipped vehicles]

0.10~0.15mm [Vehicles equipped with 1JZ-GE (2WD)]

• <Reference> If the side bearing is new, the plate washer should be Choose from the thinnest one and install it.

· If the side bearing is to be reused, use a plate washer. Attach the same thickness as before disassembly.

(2) Use a plastic hammer to tap the ring gear and Allow the ring and washer to settle thoroughly.

(3) Place the dial gauge perpendicularly to the tip of the tooth surface of the ring gear, and Fix the nion flange and move the ring gear to prevent backlash. Check.

Reference 0.13mm [Excluding 1JZ-GE (2WD) equipped vehicles]

0.10mm [1JZ-GE (2WD) equipped vehicle]

Note Measure the ring gear at three or more points on the circumference.

(4) Select a plate washer that will keep the backlash of the ring gear close to the reference value from the list of plate washers in the next section, and install it on the back side of the ring gear.

(5) Use your fingers to press the plate washer with a gap of 0 or close to 0 between the side bearing outer race end face on the ring gear tooth surface side and the carrier. Insert it all the way in and choose the thickest one. (6) Using a plastic hammer, tap the ring gear lightly to allow the bearing to settle down sufficiently.

(7) Place the dial gauge perpendicularly to the tip of the tooth surface of the ring gear, fix the companion flange, and move the ring gear to avoid backlash. Check the housing.

Standard value 0.13~0.18mm [Excluding 1JZ-GE (2WD) equipped] (vehicles 0.10~0.15mm [1JZ-GE (2WD) equipped vehicles]

Note · Measure the ring gear at three or more points on the circumference. - If it is outside the standard value, increase or decrease the thickness of the left and right plate washers by the same amount to bring it within the standard

11

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Plate washer list

7.5 inch

Product 番	Thickness (mm)	Product	Thickness (mm)	Product number	Thickness (mm)	number	Thickness (mm)
90201-65007	2.57~2.59	number 90201-65013	2.75~2.77	90201-65019	2.93~2.95		3.11-3.13
90564-65001	2.59 2.61	90564-65007	2.77~2.79	90564-65013	2.95 -2.97	90564-65019	3.13 3.15
90564-65002	2.61 2.63	90564-65008	2.79~2.81	90564-65014	2.97~2.99	90564-65020	3.15 3.17
90201-65009	2.63~2.65	90201-65015	2.81 2.83	90201-65021	2.99 3.01	90201-65027	3.17 3.19
90564-65003	2.65~2.67	90564-65009	2.83~2.85	90564-65015	3.01~3.03	90564-65021	3.19-3.21
90564-65004	2.67~2.69	90564-65010	2.85~2.87	90564-65016	3.03~3.05	90564-65022	3.21~3.23
90201-65011	2.69~2.71	90201-65017	2.87~2.89	90201-65023	3.05~3.07	90201-65029	3.23~3.25
90564-65005	2.71~2.73	90564-65011	2.89~2.91	90564-65017	3.07~3.09		
90564-65006	2.73~ 2.75	90564-65012	2.91~2.93	90564-65018	3.09 3.11		

8 inch

Product number	Identifying mark	Thickness (mm)	product number	Identifying mark	Thickness (mm)
90201-52001	01	2.57~2.59	90564-46029	47	3.03~3.05
90564-46014	32	2.59~2.61	90201-52017	17	3.05~3.07
90564-46015	33	2.61 2.63	90564-46030	48	3.07~3.09
90201-52003	03	2.63~2.65	90564-46031	49	3.09 3.11
90564-46016	34	2.65 2.67	90201-52019	19	3.11 3.13
90201-46017	35	2.67~2.69	90564-46032	50	3.13 3.15
90201-52005	05	2.69~2.71	90564-46033	51	3.15 3.17
90564-46018	36	2.71~2.73	90201-52021	21	3.17 3.19
90564-46019	37	2.73 2.75	90564-46034	52	3.19 3.21
90201-52007	07	2.75~2.77	90564-46035	53	3.21 3.23
90564-46020	38	2.77~2.79	90201-52023	23	3.23 3.25
90564-46021	39	2.79~2.81	90564-46036	54	3.25 3.27
90201-52009	09	2.81 2.83	90564-46037	55	3.27 3.29
90564-46022	40	2.83 2.85	90201-52025	25	3.29-3.31
90564-46023	41	2.85~2.87	90564-46038	56	3.31~3.33
90201-52011	11	2.87~2.89	90564-46039	57	3.33 3.35
90564-46024	42	2.89~2.91	90201-52027	27	3.35~3.37
90564-46025	43	2.91~2.93	90564-46040	58	3.37~3.39
90201-52013	13	2.93~2.95	90564-46041	59	3.39-3.41
90564-46026	44	2.95~2.97	90201-52029	29	3.41~3.43
90564-46027	45	2.97~2.99	90564-46042	60	3.43~3.45
90201-52015	15	2.99 3.01	90564-46043	61	3.45-3.47
90564-46028	46	3.01~3.03	90201-52031	31	3.47~3.49

Congratulations times

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10 Side bearing preload adjustment

(1) After adjusting the ring gear backlash, the ring gear tooth surface side

Remove the rate washer.

(2) Measure the thickness of the plate washer using a micrometer.

Set.

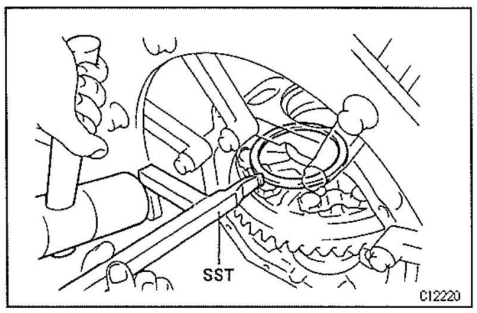
(3) Use a washer that is 0.06~0.09mm thicker than the plate washer you removed.

Install the shear.

("Rear differential carrier ASSY assembly"

-Refer to "Ring gear backlash adjustment")

Note: 注意 Attach a washer that can be inserted about 2/3 of the way with your finger. (4) Drive in the plate washer using SST.



S S T 09504-22011

(5) Aligning the bearing cap and differential carrier

Align the marks and assemble the bearing cap.

(6) Tighten the four bearing cap bolts to the specified torque.

(7) Place the dial gauge perpendicularly to the tip of the tooth surface of the ring gear, fix the companion flange, and move the ring gear to eliminate backlash.

Check.

Standard value 0.13~0.18mm [Excluding 1JZ-GE (2WD) equipped vehicles]

0.10~0.15mm [Vehicles equipped with 1JZ-GE (2WD)] If the

注意 thickness is outside the standard value, do not agree on the thickness of the left and right plate washers.

Increase or decrease by one to bring it within the standard value.

("Rear differential carrier ASSY assembly"

- See "Ring gear backlash adjustment")

11 Comprehensive preload measurement

(1) Measure the total preload using a torque wrench. drive

Measure the starting torque with the tooth surfaces of the pinion and ring gear in contact.

do.

Reference value Total preload = drive pinion preload

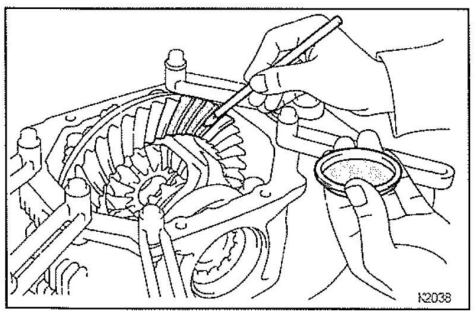
+0.39~0.59N·m {4~6kgf·cm) If it is

注意 outside the standard value, use the plate washer on the tooth side of the ring gear.

adjust.

("Rear differential carrier ASSY assembly"

- See "Ring gear backlash adjustment")



12 Inspecting ring gear and drive pinion tooth contact

(1) Apply a thin layer of Komyotan evenly on both sides of the tooth surface of the ring gear and rotate the ring gear several times. The pattern shown by Komyotan is the tooth contact position.

Ru.

注意 Check the contact status at 4 points on the circumference of the ring gear.

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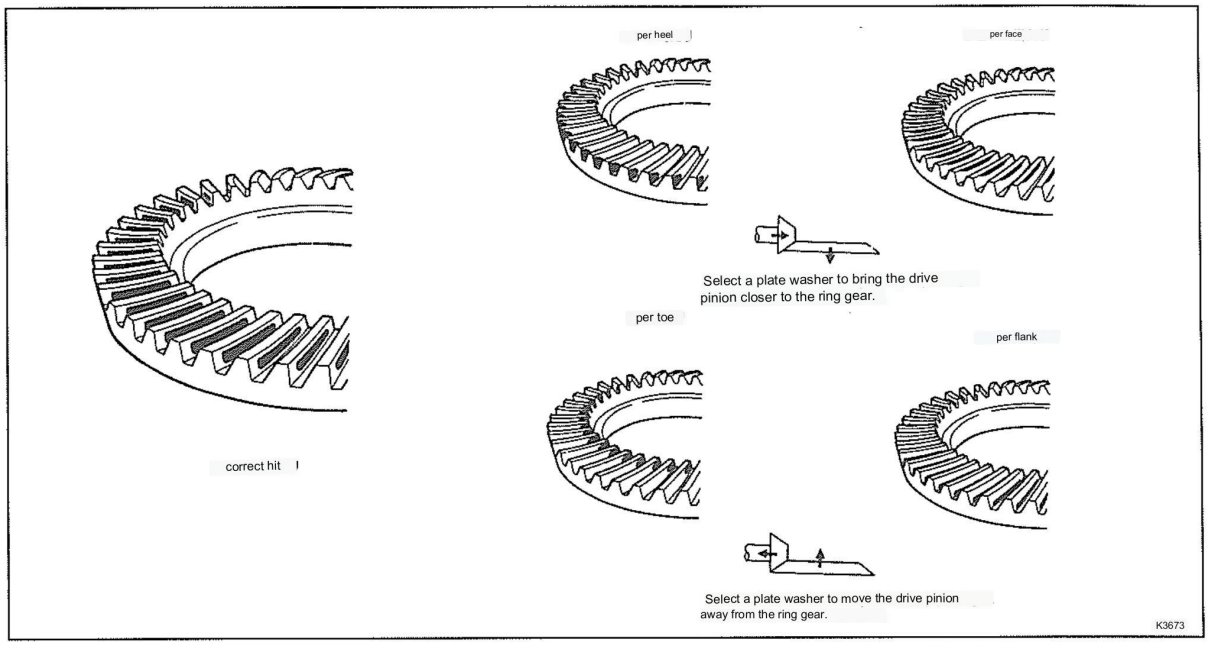
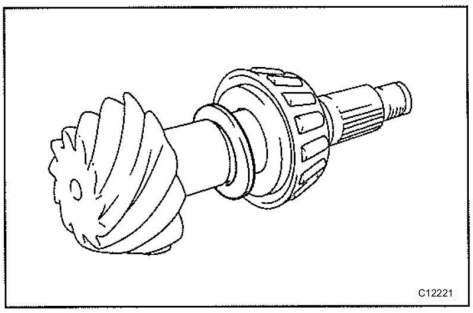




(2) If the tooth contact is poor, use the drive pinion protrusion adjustment

Select the rate washer from the table and reassemble

•Caution - Backlash standard value for face/flank contact

It may be possible to adjust within.

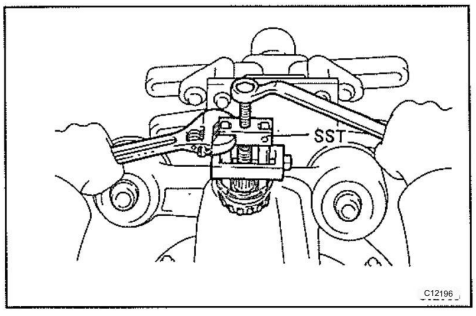
<reference> Types of plate washers

part number	Thickness (m)	part number	Thickness (mm)
90201-35497	1.69 1.71	90201-35508	2.02~2.04
90201-35498	1.72 1.74	90201-35559	2.05~2.07
90201-35499	1.75~1.77	90201-35510	2.08~2.07
90201-35500	1.78~1.80	90201-35511	2.11 2.13
90201-85501	1.81 1.83	90201-35512	2.14~2.16
90201-35502	1.84 1.86	90201-35513	2.17~2.19
90201-35503	1.87~1.89	90201-35514	2.20~2.22
90201-35504	1.90~1.92	90201-35515	2.23~2.25
90201-35505	1.93~1.95	90201-35516	2.26~2.28
90201-35506	1.96 1.98	90201-35517	2.29~2.31
90201-35507	1.99~2.01	90201-35518	2,32~2.34

13 Removal of nuts and companion flange

("Rear differential carrier ASSY disassembly"

— (Refer to "Removal of companion flange")



14 Drive pinion oil slinger removal 15

Tapered roller bearing (front bearing) removal

(1)

Using SST, remove the tapered roller bearing. TENT

09556-22010

16 Assembling the drive pinion bearing spacer (1)

the new bearing spacer to the drive pinion. Note: The larger

diameter should face the front side.

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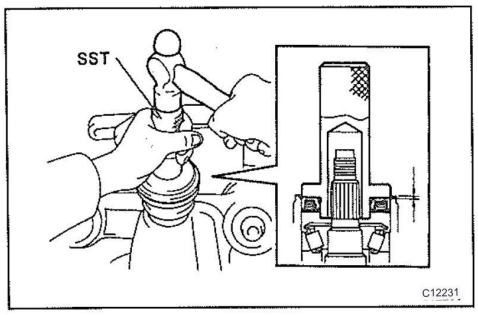


17 Tapered roller bearing (front bearing) assembly

け

18 Drive pinion oil slinger assembly

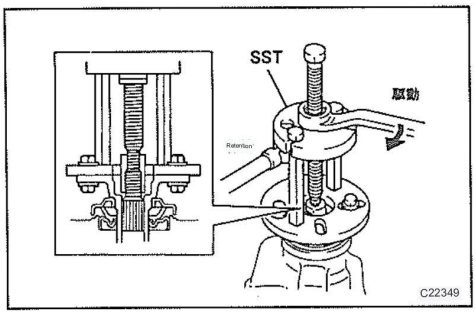
19 Oil seal assembly

(1) Using SST, drive in a new oil seal.

S S T 09554-30011

Standard value Oil seal driving amount (from carrier end face) 1.5mm

注意 Apply MP grease No.2 to the oil seal lip.



20 Companion flange assembly

(1) Install the companion flange using SST.

SST 09951-03010 09953-03010 09954-03010

09955-03030 09956-03020 (7.5 inch)

09956-03030 (8 inches)

Caution Apply oil or fat to the threaded part of the SST center bolt (09953-03010) before use.

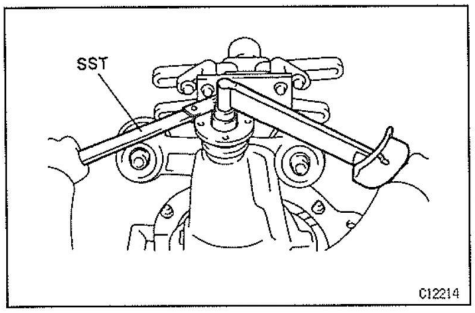
(2) Assemble the plate washer. (3)

Apply hypoid gear oil LSD to the threaded part of the new nut.

Use SST to secure the flange and tighten to the specified torque

Ru.

S S T 09330-0021



21 Drive pinion preload adjustment

(1) Using a torque wrench, measure the starting torque within the backlash range of the drive pinion and ring gear.

Standards

	7.5 inches	8 inch
When the bearing is new	1.18～1.86N•m {12～19kgf•cm}	1.08～1.67N•m {11～17kgf•cm}
When reusing bearings	0.59～0.98N•m {6～10kgf•cm}	0.59～0.88N•m {6～9kgf•cm}

11

Caution Rotate the flange forward and reverse several times to adjust the bearing. Measure after doing so.

(2) If the preload is excessive, replace the bearing spacer. (3) If the preload is insufficient, tighten the nut in 5~10℃ increments.

Measure the preload and repeatedly adjust it to the standard value.

(4) If the preload is insufficient even if the nut tightening torque exceeds the limit value, loosen the nut once and check that the nut and drive pinion threads are not crushed.

(5) If there is no abnormality, replace the spacer, apply hypoid gear oil SX and hypoid gear oil LSD to the threaded part, and repeat the above operations.

22 Comprehensive preload

(1) Using a torque wrench, measure the starting torque with the drive gear tooth surface CONTENT in contact.

Standards Comprehensive preload = Drive pinion preload

+0.39～0.59N•m {4～6kg•cm}

Pinion and ring UPLOADED BY
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23 Drive pinion and ring gear backlash inspection Standard value

(1) Place the dial gauge perpendicularly to the tip of the tooth surface of the ring gear, fix the flange of the drive pinion, and move the ring gear to measure.

0.13~0.18mm [Excluding 1JZ-GE (2WD) equipped vehicles]

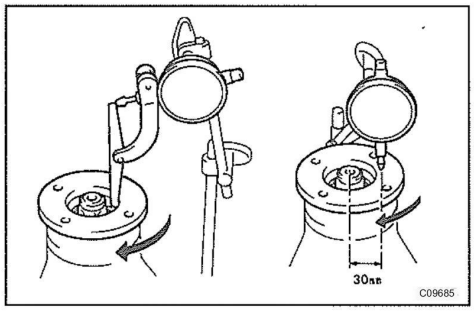
0.10~0.15mm [Vehicles equipped with 1JZ-GE (2WD)]

注意 Measure at 3 or more locations on the ring gear circumference.

24 Inspecting ring gear and drive pinion tooth contact

("Rear differential carrier ASSY assembly"

- Refer to "Ring gear and drive pinion tooth contact inspection")



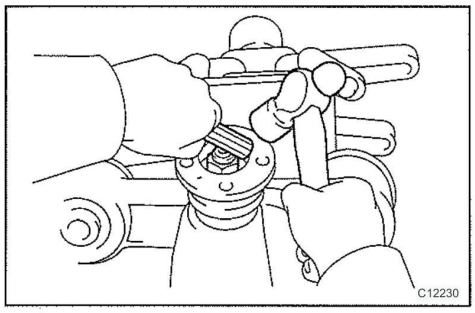
25 Inspection of companion flange runout

(1) Place the dial gauge perpendicular to the inner circumferential surface of the companion flange. and measure the vertical runout of the companion flange.

Limit 0.09mm

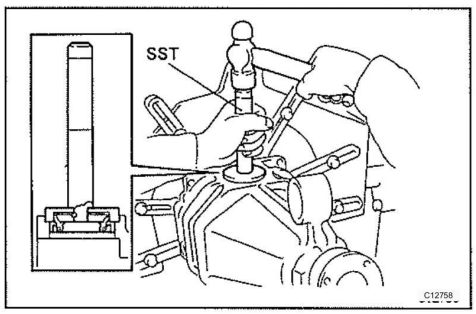
(2) Attach a dial gauge perpendicular to the companion flange surface and outside the bolt mounting hole to prevent lateral vibration of the companion flange.

Measure the limit **0.09mm**



26 Drive pinion nut caulking

(1) Use a chisel to crimp the nut.

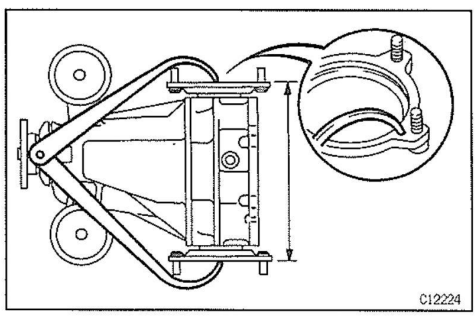


27 Side gear shaft oil seal assembly

(1) Using SST, install two new oil seals to the differential drive until it is flush with the edge of the carrier.

S S T 09550-00020 09550-00031

注意 Apply MP grease No.2 to the oil seal lip.



28 Side gear shaft assembly

(1) Assemble the new snap ring to the side gear shaft.

(2) Use SST to connect side gear shaft to differential

Type it in.

SST 09520-24010

注意 • Assemble the snap ring with the cut end facing downward.

- When inserting, do not drive in diagonally. If you drive it diagonally, Replace the nap ring with a new one and drive it in again.

• Does not damage the oil seal.

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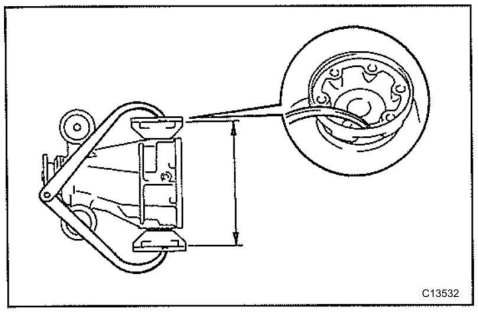
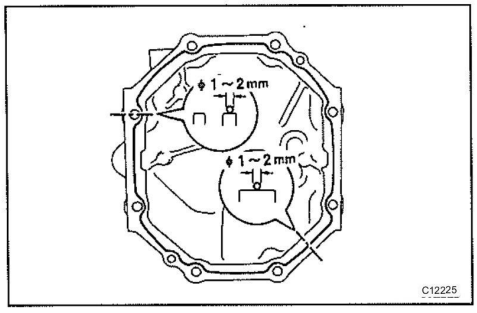


<Reference> · Changes in the repulsive force of the SST sliding hammer during driving
Or that it is hitting the pinion shaft due to a change in sound quality.
can be judged.
· The side gear shaft is a differential pinion shaft.
Measure the side gear shaft flange surface with
an outside pass.
Reference 7.5 inches (vehicles equipped with 1JZ-GE) 282.6mm or less
7.5 inches (vehicles equipped with 1G-FE, 2L-TE) 239.5mm or less
8 inches (vehicles equipped with 1JZ-GTE, 2JZ-GE) 279.7mm or less



29 Differential carrier ASSY removal
(1) Overhaul attachment of differential carrier ASSY
Remove it from the ment.
30 Differential carrier cover assembly
(1) Use a scraper and wire brush to remove the seal packing
attached to the differential carrier and carrier cover.
After cleaning with a cleaning agent, remove the oil with a cleaning solution.
注意 Do not damage the mounting surface.
(2) Seal packing 1281 in the position shown in the figure. Apply and differential
Attach to carrier.
Note · While applying the seal packing, the application does not finish within 1 to 2 mm.
· Assemble within 3 minutes after applying the seal packing.
· After assembling the cover, do not immediately add oil or drive
the vehicle; leave it for at least 1 hour. In addition, within 12 hours after
Avoid rapid acceleration and deceleration.
(3) Assemble the differential carrier cover using 8 bolts.
31 Oil level inspection and
adjustment (Refer to "Basic inspection" - "Differential oil level inspection")

Congratulations times
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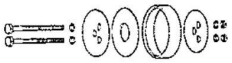
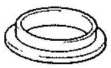
differential mount

cushion

supplies

SST

	09570-24010	Differential mount cushion remover & rib racer	Mount cushion removal and removal
	09316-12010	transfer bearing replacer	Mount cushion removal and removal

tool

Bolt (M12 x P1.25 length under neck 186mm) 90101-12159	54611	Mount cushion removal and removal
Nut (M12×P1.25) 90179-12051	54612	Mount cushion removal and removal

11

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T0048004

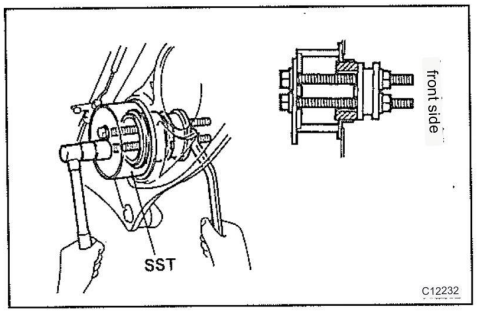
Differential mount cushion

Differential mount cushion removal

1 Differential carrier ASSY removal

("Rear differential carrier ASSY" -

(See "Points to note when installing and removing rear differential carrier ASSY")



2 Removing the differential mount cushion

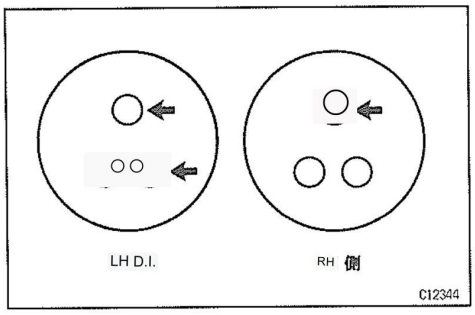
(1) Remove the mount cushion using SST.

SST 09570-24010 09316-12010

- When removing the mount cushion, be careful not to let the SST (09316- 12010) touch the subframe.· Do not make mistakes in the combination of SSTs.· Install the SST bolt so that it is not tilted.
· Tighten the SST bolts evenly on the LH side (2 holes).

<Reference> Bolt...90101-12159
Nut...90179-12051 To install

and remove the differential mount cushion LH and RH, insert the bolt into the position shown in the SST diagram.



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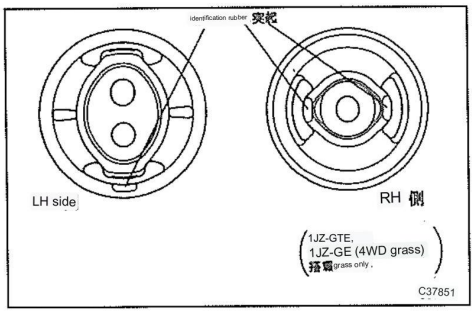
(2) The top and bottom, left and right sides of the differential mount cushion are identified using rubber protrusions for identification.

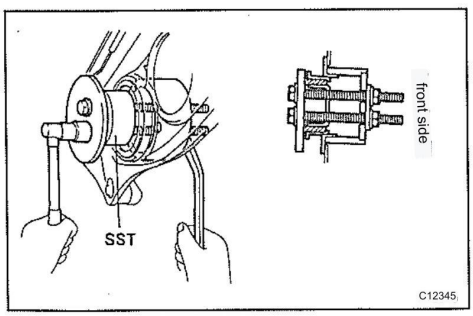


Differential mount cushion installation

1 Installing the differential mount cushion (1) Install the mount cushion using SST.

SST 09570-24010

Caution
- The deviation of the mounting cushion mounting angle should be within ±3°.
· Temporarily attach the mount cushion to the member so that it does not tilt. Install the SST from.· Do not make the wrong combination of SSTs.· Make sure that the SST is in contact with the entire circumference of the seat surface of the mount cushion.



2 Differential carrier ASSY installation

("Rear differential carrier ASSY" -

(Refer to "Notes on Rear Differential Carrier ASSY Installation and Removal Work")

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12 Brake

Brake inspection and adjustment 12-4
supplies 12- 4
Brake pedal inspection and adjustment 12- 4
Parking brake inspection and adjustment 12-5
Checking the thickness of the disc brake ..... 12 — 5
pad Air bleeding (vacuum type)
Brake booster, grass with TRC) ... 12-6
Power supply system pressure relief method
(Hydro Booster Chapter)... 12 6
How to bleed air from the brake system
(Hydro Booster Grass) ... 12-6
break pedal ..... 12 — 9
Preparations. 129
Brake pedal 12 9
Explanation diagram ..... 12 - 9
Master cylinder 12-10 ..... Preparation
items 12-10
Master cylinder 12-11
vacuum booster car ..... 12 — 11
Delivery configuration diagram ..... 12 - 11
Exploded configuration diagram ..... 12 - 12
cross section 12-13
Brake booster bushing rod clearance adjustment 12-14
Points to note when disassembling and assembling the master cylinder ... 12-14
hydro booster 車 12-15
Detachment configuration diagram 12-15
Master cylinder W/P & B valve
Points to note during removal work... 1216
Master cylinder W/ P & B valve
Points to note during installation work... 12-16
Exploded configuration diagram 12-17
Cross section 12-17
Points to note when disassembling the master cylinder 12-18
Master cylinder body inspection ..... 12 - 18
Points to note when assembling the master cylinder 12-18
Bush rod clearance adjustment 12-18
Brake booster
(vacuum type) ... 12 - 21
Preparation items 12-21
Functional check 12-21
Brake booster simple inspection 12 21
Inspection using brake booster tester 12-22
check valve inspection 12-22
Brake booster 12-23
Reservoir 12-23
configuration diagram Vacuum reservoir... 12-24
Preparation ..... 12 - 24
items Vacuum reservoir 12-25
Futang configuration ..... diagram 1225
check valve inspection 12-25
vacuum pump 12-26
Prepared items. 12- 26
vacuum pump 12-27
Exploded configuration diagram of 散杯 12-27
Vacuum pump inspection 12-28
Points to note when disassembling vacuum pump ASSY 12-28
Vacuum pump component inspection 12- 29
Vacuum pump ASSY Points to note when assembling work 12-29
front, rear brake ..... 12 - 31
supplies ..... 12 - 31
Disassembled configuration diagram 12-32
Inspection and replacement of front and rear brake components ... 12-35
Front and rear disc brake cylinder disassembly,
Points to note during assembly work... 12 37
Parking brake ..... 12 — 38
Preparation items 12-38
Parking brake ..... 12 - 39
Exploded configuration diagram ..... 12 - 39
Inspection and replacement of parking brake components 12-39
Parking brake assembly 12-40
parking brake lever
& Cable... 12-41 Preparation
items 12-41 12
parking brake lever
& Front cable 12-41
散 Configuration diagram 12-41
parking brake pedal
& Front cable... 12-42 Disassembly
diagram 12-42
Exploded configuration diagram 12-43
Rear cable 12 - 44 ..... Disassembly
diagram 12 44
P & B Valve 12 45 ..... Preparation
Items 12-45
Function ..... check 12-45
P & B valve function check 12-45
P&B valve (2L-TE equipped vehicle) 12- 47
Deconfiguration diagram 12-47
Anti-lock Braking System
(ABS) & Traction
Control system (TRC) 12-48
Prepared items. ..... 12 - 48

The first time is the first time.

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Parts layout diagram ····· 12-50
Brake actuator exploded —····· 12-51
configuration diagram ····· 12 — 51
speed sensor ····· 12-52
Futang ····· 12-52
Configuration Diagram ABS (ABS & TRC) Computer ····· 12-53
脱膻Configuration Diagram ····· 12-53
Main throttle position sensor..... ··· 12-54
Sub throttle position sensor..... ··· 12 - 54
Subthrottle valve motor ····· 12-54
Electronic throttle computer
[1JZ-GTE (TRC equipped vehicle) only] ··· 12-54
Deceleration sensor (4WD vehicle) ····· 12-55
Configuration diagram ····· 12-55
Deceleration sensor operation check and installation
condition check (4WD vehicle) ··· 12-56
Troubleshooting· ····· 12-59
How to proceed with troubleshooting ····· 12-59
Handling and working precautions ····· 12 — 59
circuit diagram ····· 12-61
Troubleshooting by diagnosis code
(ABS 編)··· 12 — 66
ABS actuator function check ····· 12-74
Sensor test mode inspection ····· 12-76
Troubleshooting by problem phenomenon ····· 12 — 78
Individual inspection (ABS edition) ····· 1279
brake actuator ····· 12-79
ABS relay... ····· 12-80
stop lamp switch ····· 12-81
front speed sensor ····· 12-81
rear speed sensor ····· 12-81
ABS warning lamp ····· 12 — 82
ABS Computer ····· 12-82
Troubleshooting by diagnosis code
(TRC 編) ··· 12 — 96
Troubleshooting by problem phenomenon
(TRC OFF warning lamp display) ... 12-100
Individual inspection (TRC edition) ····· 12-101
brake actuator ····· 12-101
ABS & ABS Relay ····· 12-101
Stop Lamp Switch ····· 12-101
front speed sensor ····· 12-101
Rear speed sensor •••• ····· 12-101
TRC OFF switch ····· 12-101
Slip indicator and TRC OFF lamp... 12101
ABS & TRC computer ····· 12-101
Precautions while working ····· 12-102
1 Connect the battery terminal
Precautions when removing... 12 102
2 Precautions when using a drum tester ····· 12-102
3 Precautions when working with VSC ····· 12-102
hydro booster system
& VSC (Vehicle Stability
Control) ··· 12-103
Preparation ····· items 12-103
Parts arrangement 図 ····· 12-105
Brake master cylinder ASSY
W/ABS & TRC··· 12-106
脱 Configuration diagram ····· 12-106
Exploded configuration diagram ····· 12-107
Master cylinder ASSY W/ABS &
Points to note when removing TRC... 12-108
Brake master cylinder ASSY
W/ABS & TRC disassembly... 12-108
Brake booster pump ASSY
W/accumulator disassembly… 12109
Disposal of brake booster accumulator
(Gas removal) Method... 12-110
Brake master cylinder ASSY W/ABS&
Points to note when assembling TRC... 12-110
Front speed sensor... ····· 12-111
rear speed sensor ····· 12-111
subthrottle position sensor ····· 12-111
sub throttle valve motor ····· 12-111
yaw rate sensor ····· 12-111
acceleration sensor ····· 12-112
ABS & TRC & VSC Computer ··· 12-113
脱釐结构图 ····· 12-113
throttle valve motor driver ····· 12-114
脫釐configuration diagram ····· 12-114
troubleshooting ····· 12-115
How to proceed with troubleshooting ····· 12-115
circuit diagram ····· 12-117
Troubleshooting by diagnosis code 12-118 Functional
check ····· 12-129
Lamp & Buzzer Inspection ····· 12-129
sub throttle valve motor ····· 12-129
Brake master cylinder ASSY
W/ABS & TRC
(Power supply system function operation check) ··· 12-129
Booster function check ····· 12-130
Solenoid operation check ····· 12-132
Test mode inspection ····· 12-134
Troubleshooting by problem phenomenon ····· 12-135
Individual inspection/ ····· 12-137
Brake master cylinder ASSY
W/ABS & TRC··· 12 — 137
Skid control relay ····· 12-140
throttle valve motor ····· 12-140
stop lamp switch ····· 12-140
front speed sensor ····· 12-140
rear speed sensor ····· 12-140

12

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Throttle position sensor (main, sub) ... 12-140
Combination meter ... 12-140
acceleration sensor ... 12-140
master cylinder oil pressure sensor ... 12-141
VSC warning lamp ... 12-141
ABS warning lamp ... 12-141
TRC OFF lamp ... 12-141
slip indicator light ... 12-141
throttle valve motor driver ... 12-142
ABS & TRC & VSC Computer.... ... 12-144
Tire pressure warning system ... 12-151
Preparation ... 12-151
parts parts layout diagram ... 12-151
circuit diagram: ... 12-152
troubleshooting ... 12-152
Troubleshooting by problem phenomenon ... 12-152
Functional check... ... 12-154
Tire pressure warning lamp check ... 12-154
Individual inspection... ... 12-154
set switch ... 12-154
stop lamp switch ... 12-154
tire pressure alarm computer ... 12-154

12

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T0049708

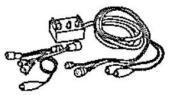
Brake inspection and adjustment

supplies

tool

	09704-10010	brake adjusting tool	For barking brake adjustment
	TCP-2TB	turbocharger pressure gauge (Treatment as Banzai	For brake air bleeding (with brake control TRC)
	brake reservoir pressure adapter BR-PAP treated as Banzai Co., Ltd. 14003		For brake air bleeding (vehicles with brake control TRC)

計器

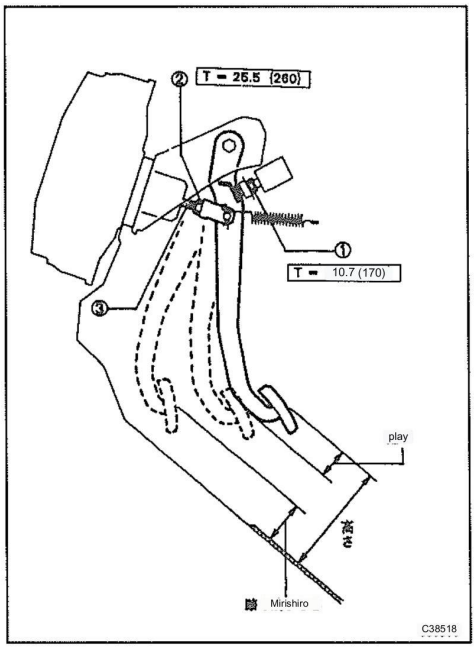
	09990-00141	ABS actuator Checker and sub harness	For brake air bleeding (hydro booster vehicles)
	09990-00390	ABS actuator checker sub harness N	For brake air bleeding (hydro booster)
	09990-00240	ABS actuator checker seat G	For brake air bleeding (hydro booster vehicles)

Oils and fats/others

Toyota genuine brake fluid 2500H 32503		For brake air bleeding

T0049707

12



Brake pedal inspection and adjustment

1 Brake pedal inspection and adjustment

standard list

Inspection items	Reference value
pedal height	149.5~159.5mm
pedal play	1~6mm
Leave the pedal pressed	82mm or more

Caution

- Pedal height is measured from the top of the asphalt sheet. If it
- exceeds the standard value, adjust in the order of ①, ②, ③ and ① on the left.

times house times timesBox
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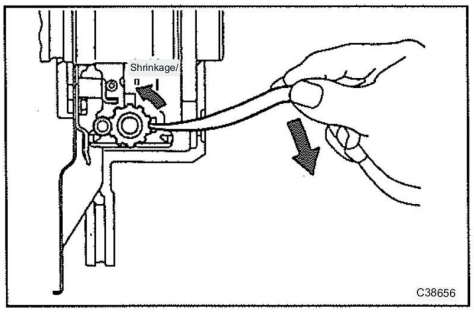
Parking brake inspection and adjustment

1 Inspection of parking brake pull and pedal pressure

Standard list

job	Operating force [N{kgf}]	Standards
lever type	196 (20)	5~8 notches
pedal type	294 (30)	5~7 notches



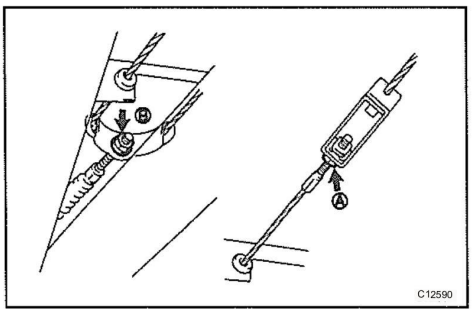
2 Parking brake adjustment

(1) Turn the adjusting screw to set the parking brake.

Expand the shoe until it makes contact with the drum, then retract it until the disc rotates slightly.

No dragging in the brakes

<Reference> Number of frames restored when new: 8 frames



(2) Loosen the lock nut on the parking brake rear cable, and turn the turnbuckle to release the parking brake.

Adjust the white.

If the turnbuckle cannot be adjusted completely, use the equalizer (part).

3 Check parking brake warning switch

standard The indicator lamp lights up before one notch from the start of pulling or stepping.

Inspecting the thickness of disc brake pads

12

1 Inspection of disc brake pad thickness

List of new thickness and limit values

torture	front		Rear	
	When new [a]	Limited [opened]	When new [a]	When new [n]
1G-FE 2L-TE	12.0	1.0	12.0	1.0
1JZ-GE 2JZ-GE	11.0	1.0	10.0	1.0
1JZ-GTE	11.0	1.0	12.0	1.0

*JB3252

If the limit is exceeded, replace the brake pads.

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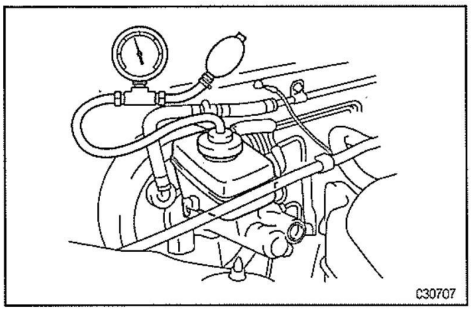


Air bleed (vacuum type)

Brake booster, vehicles with TRC)

1 Reservoir tank hose air bleed

(1) Remove the master cylinder reservoir cap and remove the brake valve.

Refills the reservoir with Rude to its MAX level.

(2) Attach the brake reservoir pressure adapter to the reservoir.

and connect the turbo pressure gauge to the adapter. (3)

Use a pressure gauge to apply a pressure of 0.98MPa {1kgf/cm}

to the reservoir, and check the brake actuator bleeder plug.

Loosen the plug and bleed the air.

(4) Repeat steps (1) to (3) until no air comes out from the bleeder plug.

Do it again and

again. Power supply system pressure relief method (hydro booster vehicle)

(1) With the ignition switch OFF, press the brake pedal more than 40 times.

Step up. When the

〈参考〉 pressure in the power supply system is released, the reaction force on the pedals becomes

heavier. How to bleed air from the brake system (hydro booster vehicle)

注意 · When carrying out the following inspection work, be sure to erase the diagnosis code memory and confirm that a normal code is output after the inspection and completion of the inspection to memorize the diagnosis code.

· Bleed air by turning the ignition switch ON.

· Do not hold down the checker switch for more than 10 seconds continuously.· When adding brake fluid during air bleeding, keep it between the MIN and MAX lines of the reservoir.

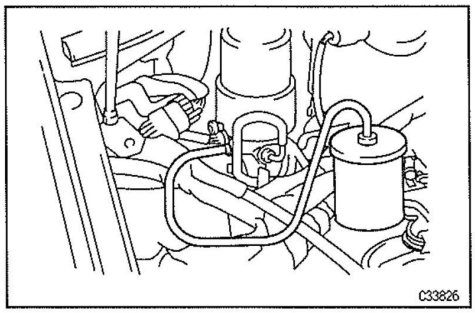
· Air bleed from master cylinder system (normal air bleed from each wheel)

Do not operate the pedals so vigorously that the pump motor operates frequently.· After

bleeding the air, the brake drag is more extreme than before bleeding the air.

Make sure that it is not too large.

12



1 Brake booster pump operation check

(1) Turn on the ignition switch and start the pump, and if the

Verify that the pump stops after 40 seconds.

注意 pump does not stop after 30 minutes, air may be trapped, so loosen the bleeder plug while the pump is running to bleed the air.

T=8.3N·m {85kgf·cm}

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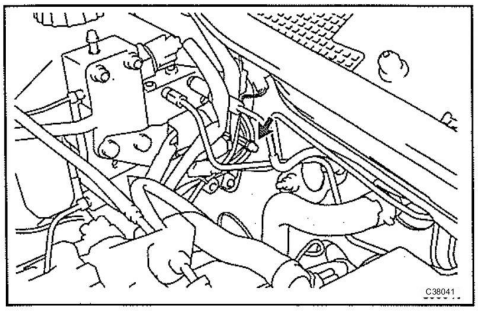
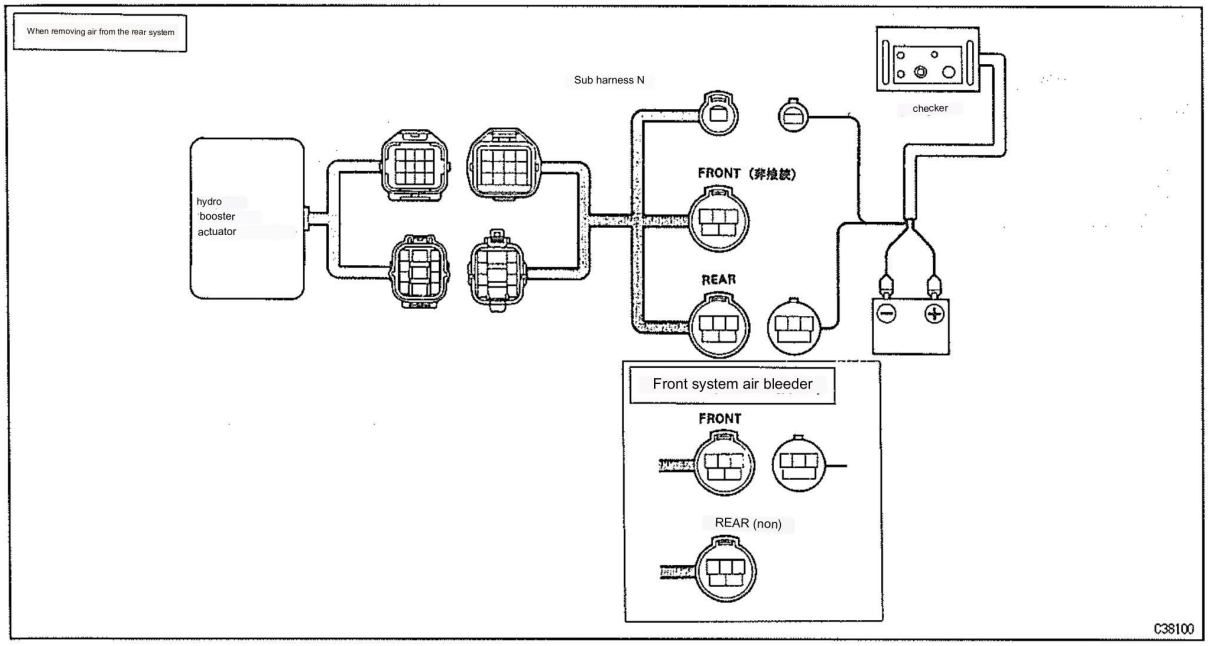


2 Power system air bleed

(1) Keep the brake pedal depressed and loosen the bleeder plug on the side of the hydro booster to bleed air.
T=8.3N·m {85kgf·cm}



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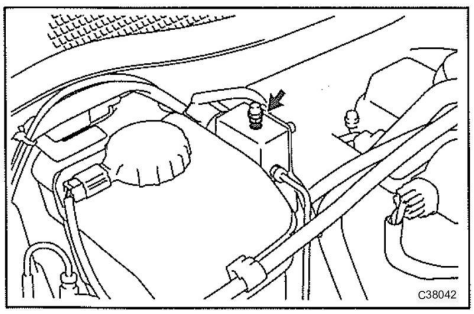
3 Rear system air bleed

(1) Connect the ABS actuator checker to the hydro booster actuator via sub harness N.
(Reference) Do not connect anything to the subharness connector FRONT.

(2) Connect the checker's power harness to the battery.

(3) Cover the checker with sheet G (REAR).

(4) Perform normal air bleeding from the left and right rear wheels.



(5) Loosen the bleeder plug of the oil pressure sensor and perform normal air bleeding.

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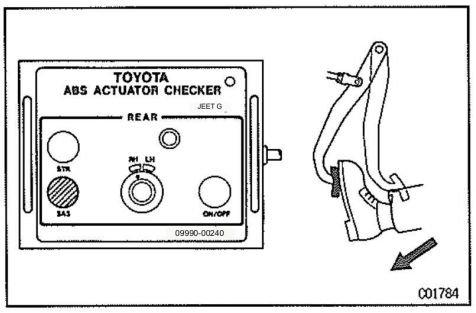
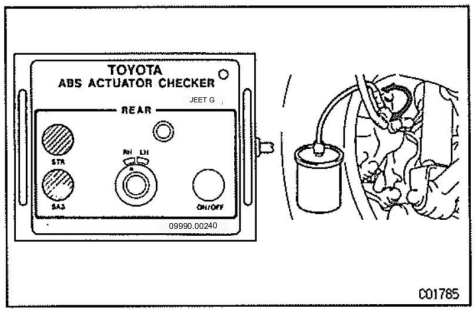


(6) While keeping the brake pedal depressed and pressing the "SA3" switch, insert the rear disc brake cylinder (either the left or right is fine, but the select switch should be set on the side of the wheel where air is to be bleed). Loosen the bleeder plug and bleed the air.
T=10.8N·m {110kgf·cm}
〈参考〉 Brake fluid comes out continuously.
注意 Make sure that the select switch is set to the side of the wheel where air is to be bled. .



(7) Without stepping on the brake pedal, while pressing the “SA 3” and “STR” switches at the same time, loosen the bleeder plug of the rear disc brake cylinder (either left or right) to bleed the air.
T＝10.8N•m {110kgf•cm}
注意 Be careful as brake fluid will come out suddenly. (8)
Release your hand from the "STR" switch and press the "ON/OFF" switch.
Release your hand from the “SA3” switch.

4 Front system air bleed
(1) Remove connector REAR of sub-harness N, and connect
Connect FRONT to checker.
(2) Cover the checker with sheet G (FRONT).
(3) Perform normal air bleeding from the left and right front wheels.
(4) While keeping the brake pedal depressed and pressing the "SA1" switch, loosen the bleeder plug on the right front disc brake cylinder to bleed air.
T=10.8N·m {110kgf·cm}
<Reference> Brake fluid comes out continuously.
• Either {4} or (5) can be done first.
(5) While keeping the brake pedal depressed and pressing the “SA2” switch, loosen the bleeder plug of the left front disc brake cylinder to bleed air.
T=10.8N·m {110kgf*cm}
(reference) Brake fluid comes out continuously.

5 Brake fluid amount adjustment
(1) With the ignition switch OFF, depress the brake pedal at least 40 times to release pressure from the power supply system.
〈参考〉 When the pressure in the power supply system is released, the reaction force on the pedals becomes heavier. (2) In the state of (1), make sure that the brake fluid level is at the MAX position.
Then, adjust the amount of fluid.

6 Diagnosis code deletion
注意 The diagnosis code is memorized when the actuator connector is disconnected, so be sure to erase the memory of the diagnosis code after completing the inspection.
("Troubleshooting" - "Diagnosis check"
- "Diagnosis Road Erase" 参照()

7 Confirm normal code

12

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T0049709

break pedal

supplies

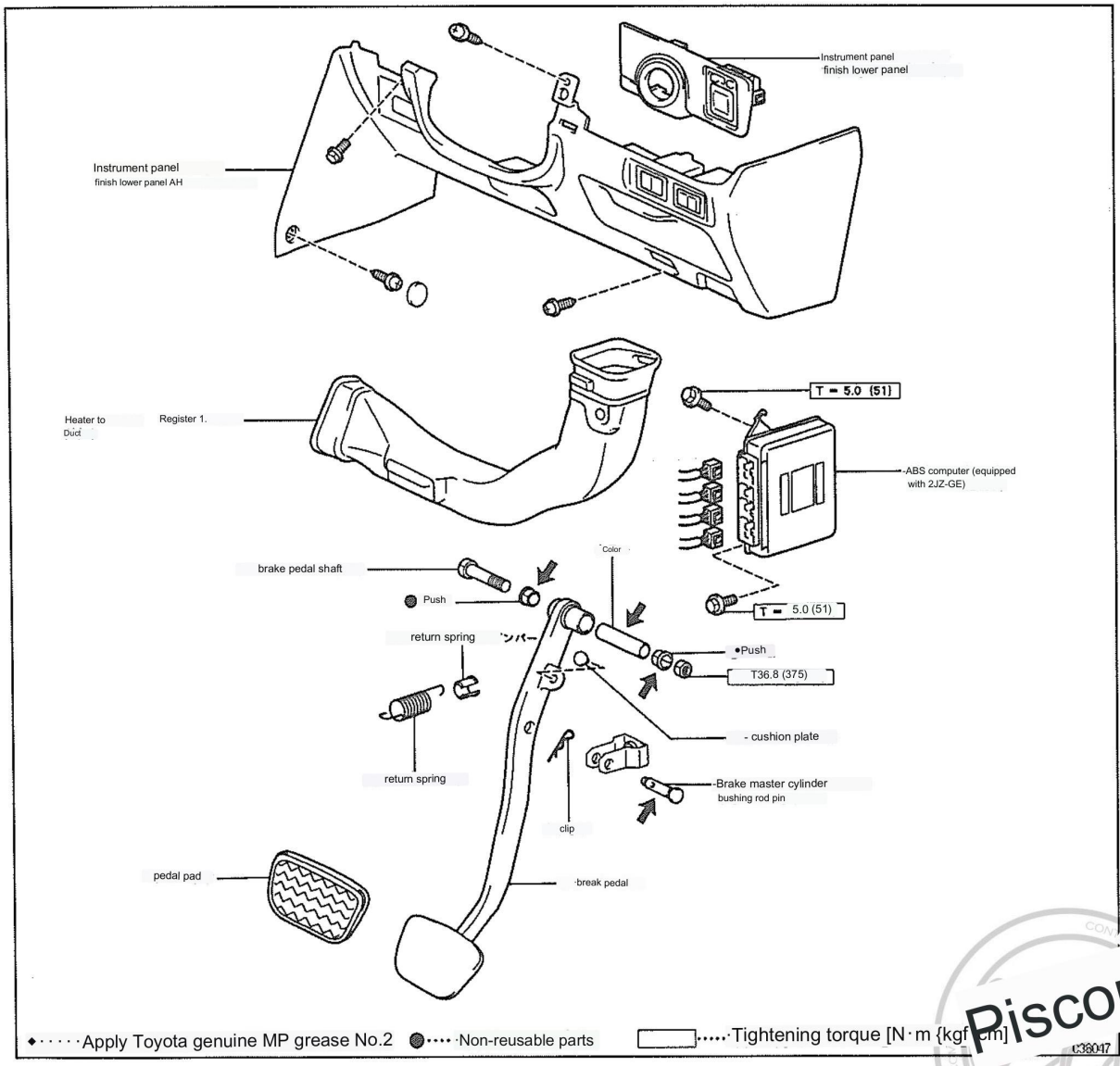
Oils and fats Others

Toyota genuine MP grease No.2 30204	For applying to each part

T0040700

break pedal

Detachable exploded configuration diagram



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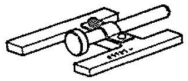
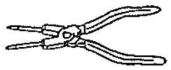
T0040710

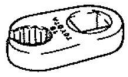
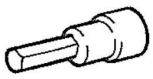
Master Cylinder

supplies

SST

	09737-00010	Brake booster push rod gauge	For adjusting the gap between the master cylinder and bush rod (vacuum booster vehicle)
	09905-00013	snap ring pliers	Snap ring removal and removal

tool

	09023-00100	union nut wrench	For disconnecting and connecting brake tubes
	09040-00010	Hexagon wrench set	
	(09043-20080)	Socket hexagon wrench 8	Master cylinder removal (hydro booster) 用

instrument

vernier caliper 20202	Hydro booster, bush rod clear For lance adjustment

Oils and fats/others

Toyota genuine brake fluid 2500H 32503	For brake air bleeding
Toyota genuine rubber grease 30902	For applying to each part
才Piece 53601	Cylinder piston removal 用 (Vacuum type booster)

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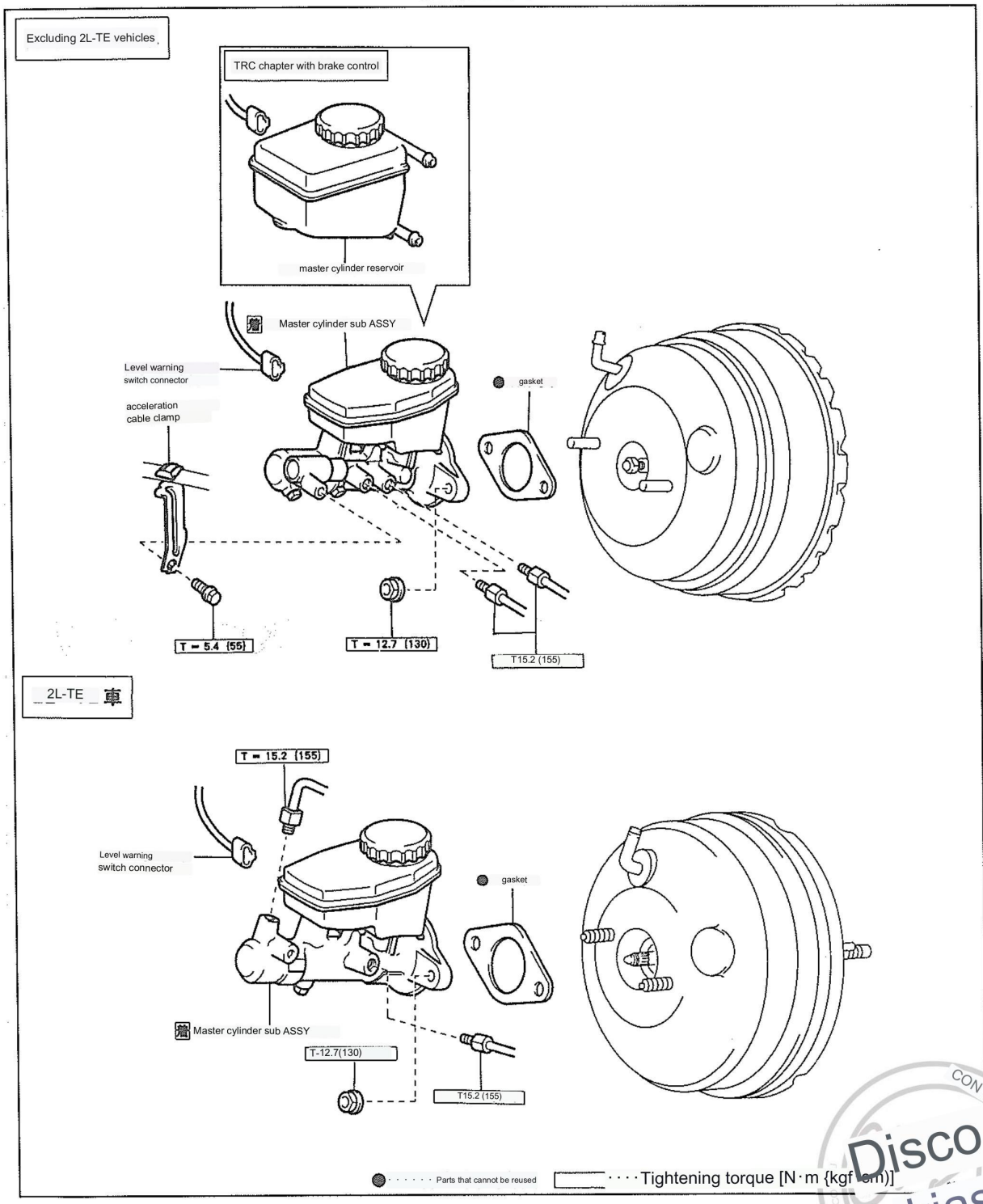
T0049711

Master Cylinder

vacuum booster car

Detachment configuration diagram



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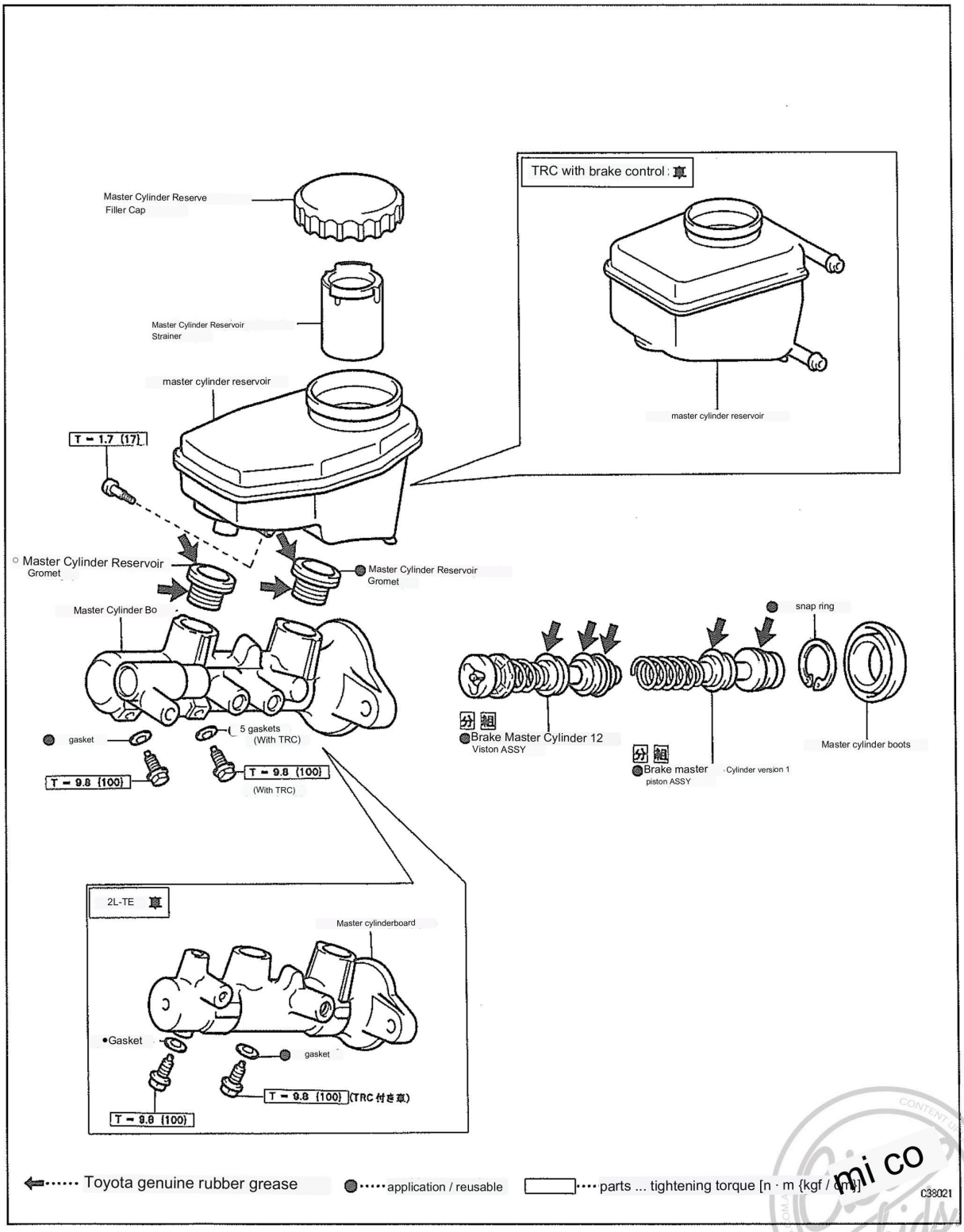
Exploded configuration diagram



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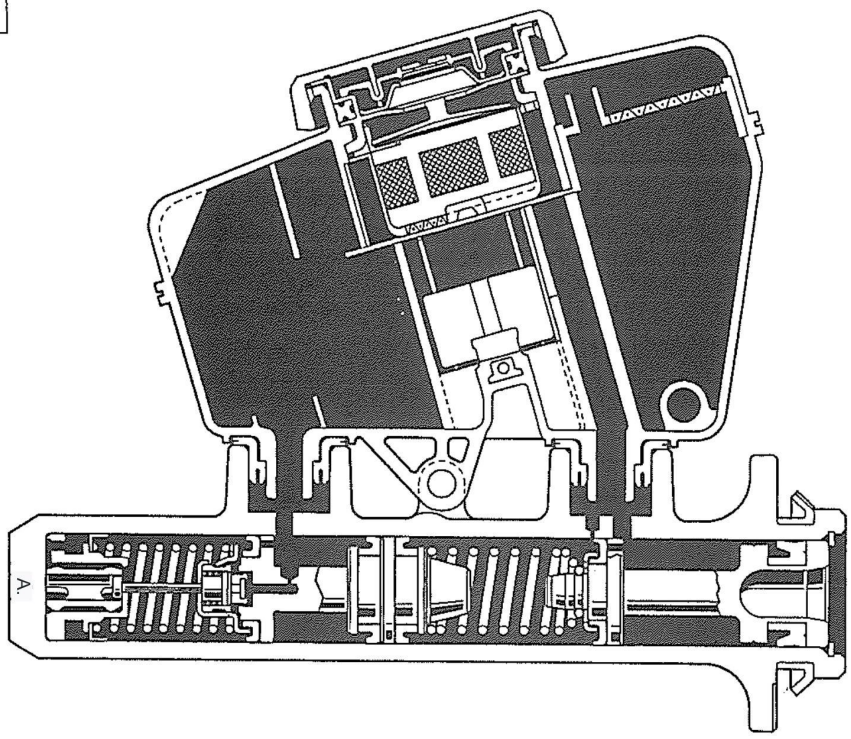
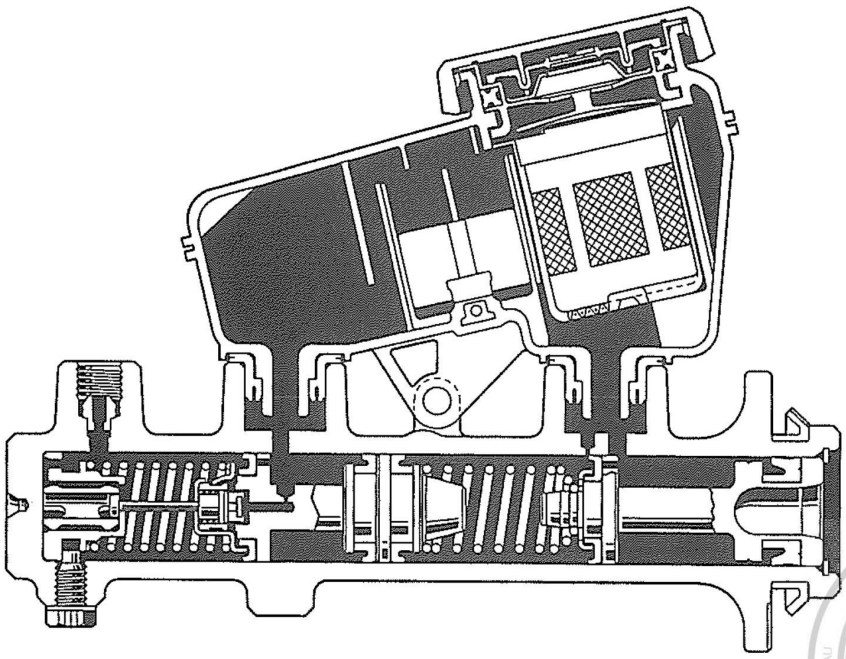
Congratulations

cross section 図

Excluding 2L-TE vehicles



2L-TE car



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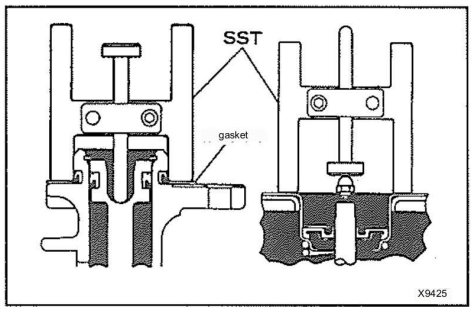


Brake booster push rod clearance adjustment

(1) Place the SST rod so that it lightly touches the piston of the master cylinder.

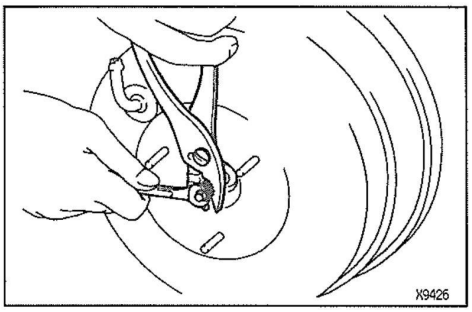
置 to Install

Note a new gasket on the master cylinder. S ST

09737-00010

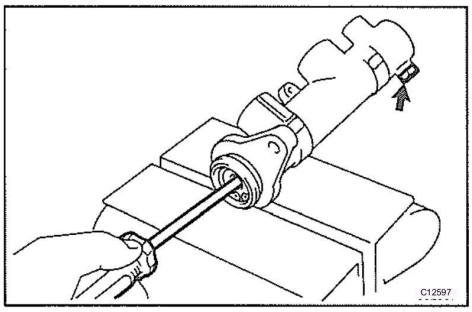
(2) Turn the SST over and check the gap between the SST rod and the booster push rod.

Standard gap 0mm



If it is outside the standard, depress the brake pedal and extend the booster push rod, then adjust the length of the push rod. Perform adjustment without

注意 negative pressure inside the booster. (If negative pressure remains, press the brake pedal several times to bring the inside of the booster to atmospheric pressure.)



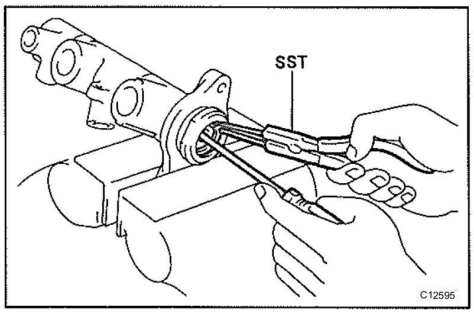
Points to note when disassembling and assembling the master cylinder

1 Removing master cylinder pistons No. 1 and No. 2 ·

注意 ·Push in the cylinder piston slowly to prevent fluid from popping out.

· Install the piston straight to avoid damaging the inside of the cylinder. Perform removal and assembly.

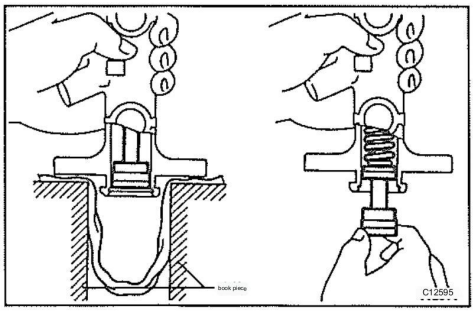
(1) Push in the piston using a + screwdriver and remove the piston stopper bolt and gasket.



(2) Push the piston in using the +screwdriver and using the SST Remove the snap ring.

S S T 09905-00013

(3) Pull the No.1 piston straight to remove it.



(4) Assemble two pieces of wood and a rag as shown in the diagram, and tap the flange against the piece of wood until the No. 2 piston is in a position where it can be removed. (5) No. 2 Pull the piston straight to remove it.

2 Assembling master cylinder pistons No. 1 and No. 2

(1) Apply a thin layer of rubber grease to the seals of the new master cylinder No. 1 piston and No. 2 piston, and assemble them to the cylinder

〈参考〉 body. When assembling the snap ring and stopper bolt, Proceed in the same way as sushi.

steamed noodles
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hydro booster car

T0049712

Detachment configuration diagram

注意 · Before removal, be sure to clean the mounting area and relieve pressure from the power supply system.

("Brake inspection and adjustment" - "Power supply system pressure relief method"

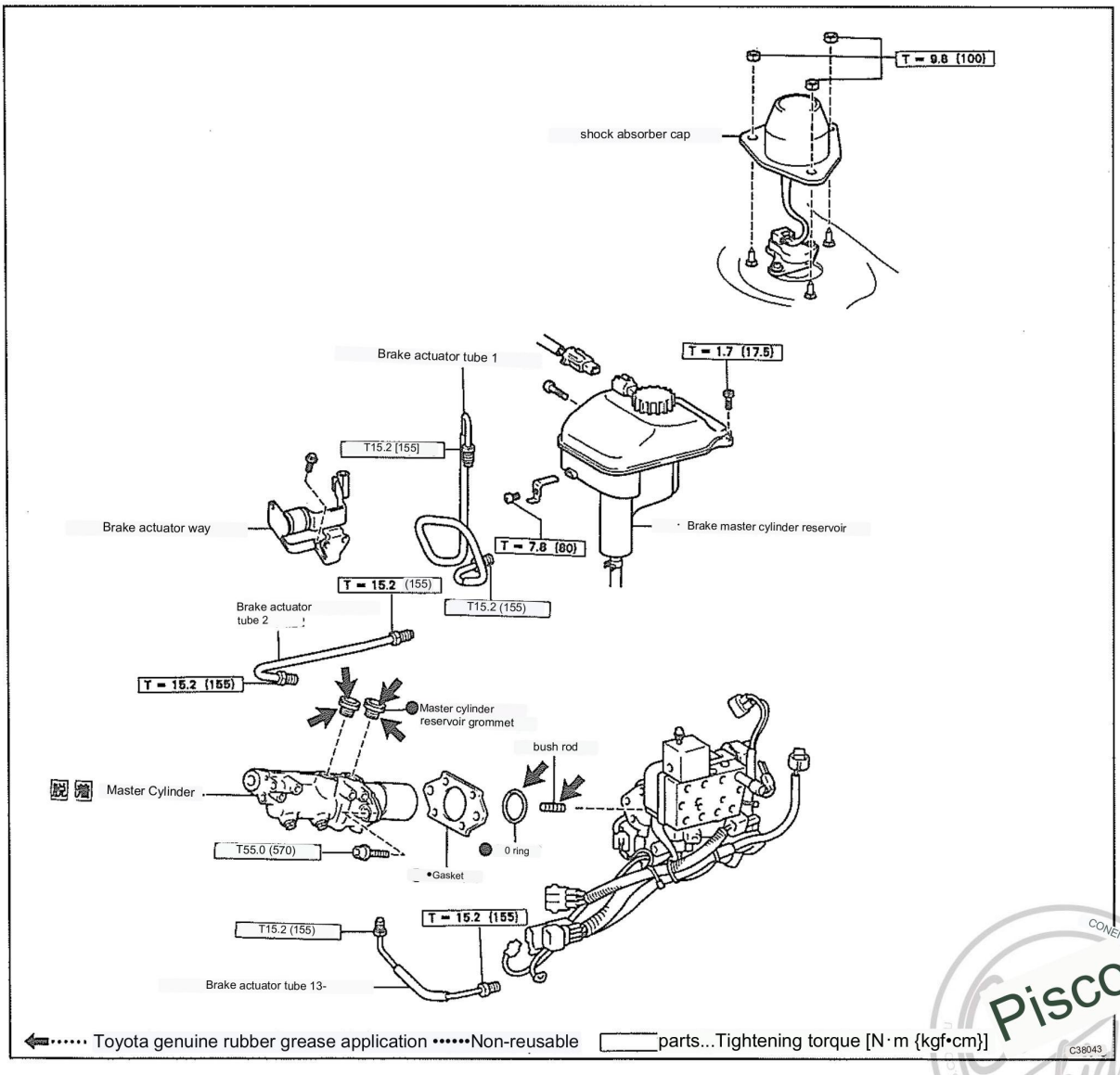
(See Hydro Booster Army)

- The brake actuator tube (red) is subject to high pressure, so never allow it to deform.

• After installation, bleed the air inside the hydro booster.

("Brake inspection and adjustment" "Brake system air bleeding (hydro booster vehicle)"

参照()



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Master cylinder W/ P & B valve

Points to note during removal work

1 Power supply system pressure relief

("Brake inspection and adjustment" - "Power supply system pressure relief method"

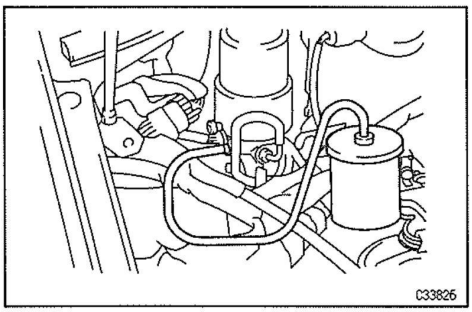
(See "Hydro Booster Vehicle")")

2 Shock absorber cap and suspension control

Roll actuator removal

("Suspension & Axle" - "Front suspension"

- (See "Front Shock Absorber")



3 Draining brake fluid

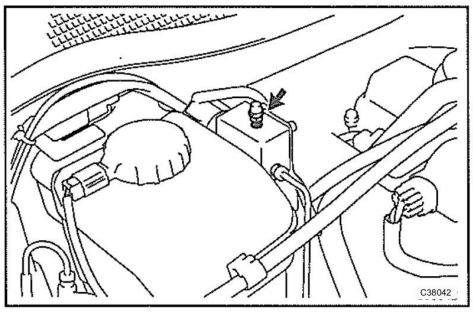
(1) Connect the tank to the bleeder plug of the brake booster pump and loosen the bleeder plug slightly.

(2) Turn the ignition switch ON and drain the fluid until the fluid in the reservoir tank runs out and you hear the sound of the pump running idle.

(3) Depress the brake pedal and drain the brake fluid from the bleeder plug of the front disc brake cylinder.

(4) Depress the brake pedal, loosen the bleeder plug of the oil pressure sensor, and drain the brake fluid.

(5) If there is any brake fluid left in the reservoir tank, repeat steps (1), (2), (3) or (4) to remove as much brake fluid as possible from the reservoir tank.



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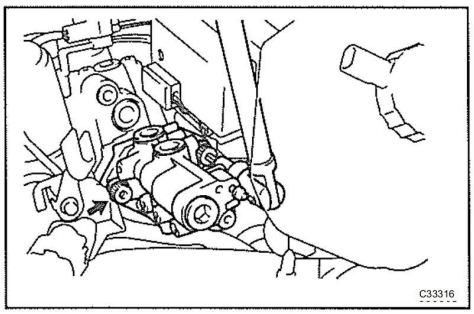
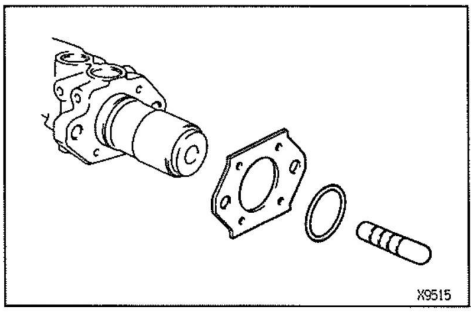


4 Master cylinder removal

(1) Using a hexagon wrench (8mm), remove the two bolts.

(2) Gently pull the master cylinder forward to remove it.

(3) Remove the bushing rod, O-ring and gasket from the master cylinder.



Master cylinder W/ Points to note when installing P & B valves

1 Master cylinder installation

(1) Attach a new gasket and O-ring to the master cylinder.

Apply bar grease and install. (2) Apply enough rubber grease to the entire surface of the push rod, and Attach it to the tar cylinder.

(3) Hold the master cylinder gently to prevent the push rod from falling. Attach it to the hydro booster.

Be careful not to get the wire harness caught. (4) Tighten the two bolts using a hexagon wrench (8mm) Ru.

Congratulations
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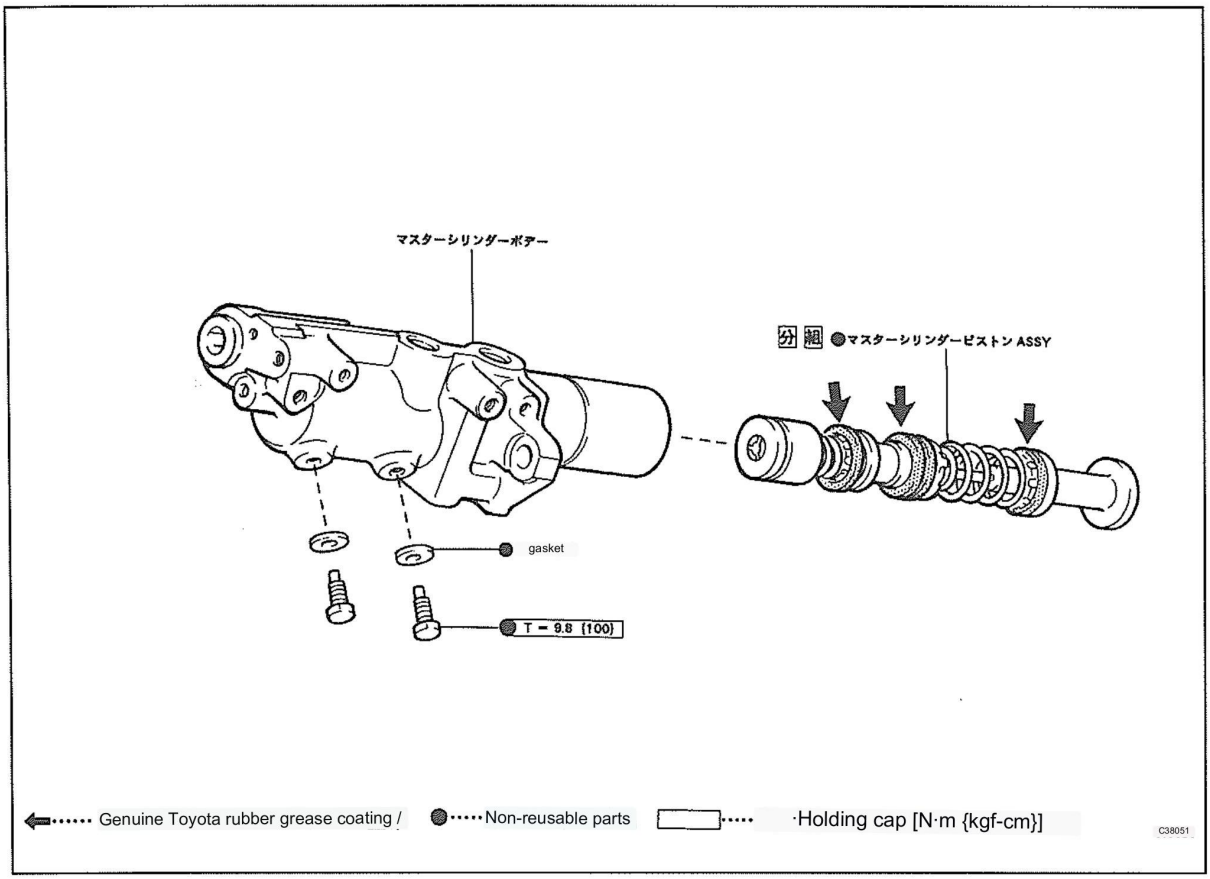
Exploded configuration diagram



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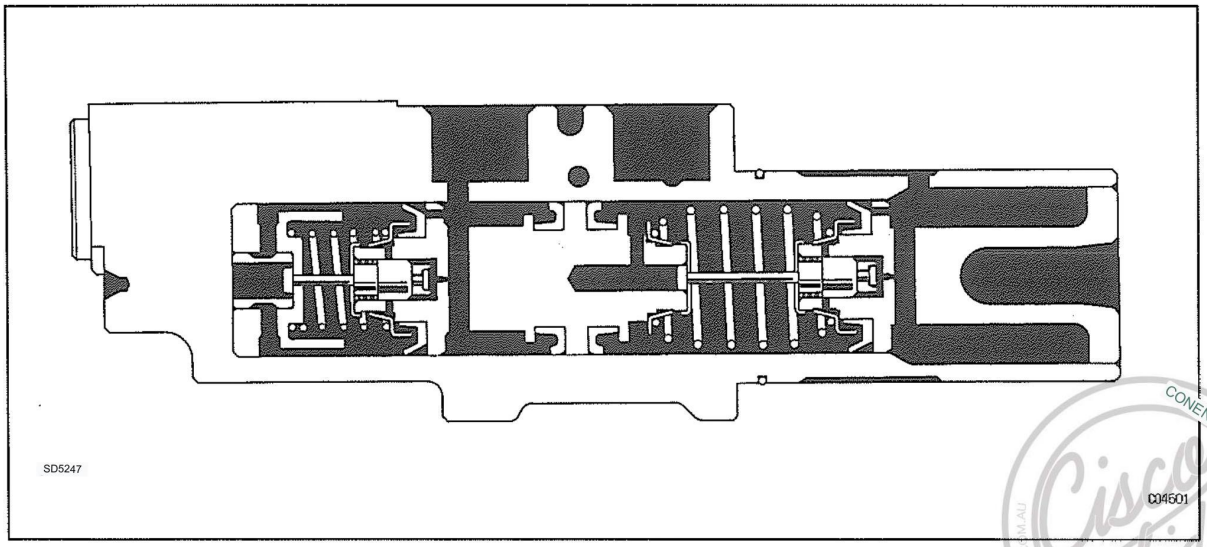
cross section



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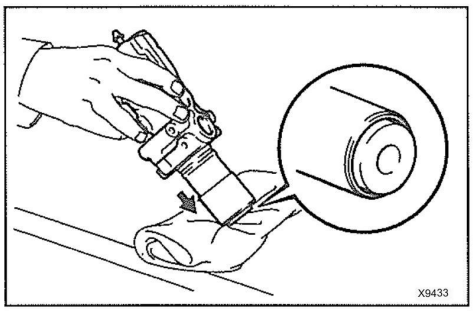

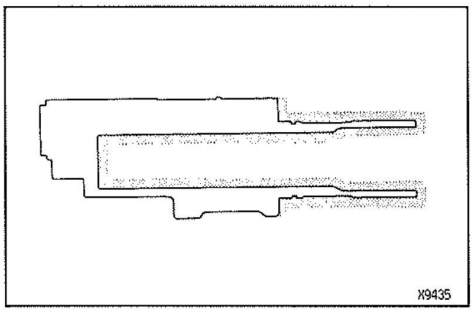

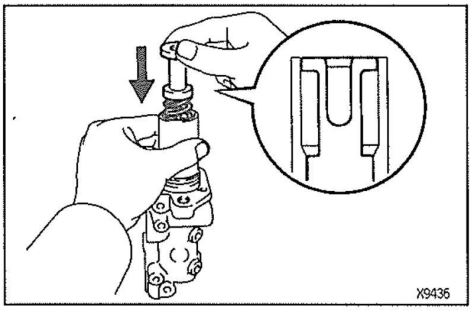

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Points to note when disassembling the master cylinder

1 Remove master cylinder piston

(1) Remove the two piston stopper bolts and gasket.

注意 To protect the mounting surface, do not secure it in a vise,

etc. (2) Lightly touch the corner of the master cylinder body to a rag stacked on the table, and remove part of the piston from the cylinder body.

(3) Remove the piston by pulling it straight out of the cylinder body.

vinegar.

Caution Be careful as the piston is long and can easily get caught. Master cylinder body inspection

1 Master cylinder body inspection

(1) Check that there are no scratches on the inside of the cylinder and the mounting surface. Points to note when assembling the master cylinder

1 Rubber grease application

(See "Exploded diagram")

2 Master cylinder piston assembly

(1) Insert a new piston into the cylinder body. [Note: To avoid

注意 the inner surface of the cylinder and the cup, the piston should be insert straight 。

〈参考〉 When the piston is fully inserted, the end surfaces of the cylinder and piston will be almost the same.

3 Assembling the piston stopper bolts (1) Install two new stopper bolts using new gaskets.

注意 Make sure the piston is fully inserted before tightening the bolt. Assemble.

Push rod clearance adjustment

注意 When replacing the master cylinder sub ASSY or master cylinder inner kit, be sure to adjust the shrod clearance according to the procedure below, as this may プッ cause a change in brake feeling and drag.

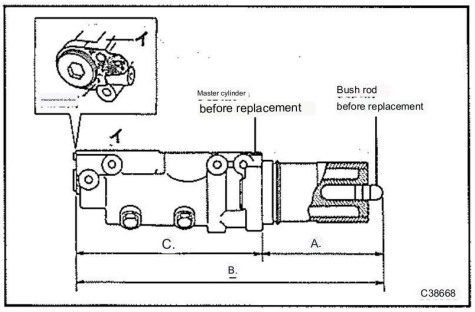
1 Measurement of master cylinder dimensions before replacement

(1) Assemble the push rod to the master cylinder before replacement (without gasket), measure each part (B and C dimensions) using a caliper (300mm), and calculate the A dimension.

Note that measurements are performed with an accuracy of 1/20 mm.

Calculation method $A = B - C$

〈参考〉 · When measuring dimension B, place the main scale of the caliper on the side A shown in the diagram. Stable measurements can be made.· When replacing the master cylinder inner kit, measure only B. good.



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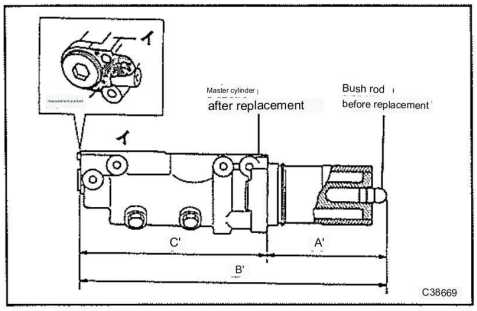


2 Measuring the dimensions of the master cylinder

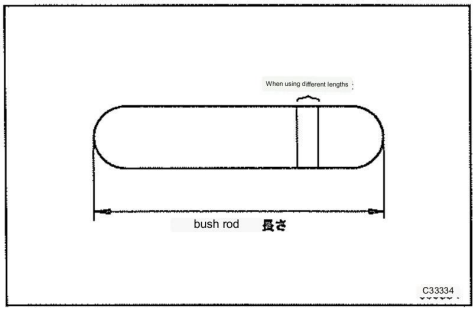
after replacement (1) As shown in the diagram, combine the master cylinder after replacement (without gasket) and push rod, and measure each part (B',' dimensions) using calipers (300mm). and calculate the A' dimension.

Note that measurements are performed with an accuracy of 1/20 mm.

Calculation method $A' = B' - C'$

〈参考〉 - When measuring dimension B', stable measurements can be made by applying the main scale of the caliper to the side A shown in the figure.

- When replacing the master cylinder inner kit, measure only B' That's fine.



3 Comparison of master cylinder dimensions before and after replacement

(1) Difference between A and A' dimensions (X^) or B and B' dimensions obtained in the previous section 1 and 2

Calculate the difference (X) between the laws and check whether it is within the standard value.

- When replacing master cylinder sub ASSY

  Calculation method X=A-A'

- When replacing master cylinder inner kit

  Calculation method X=B-B'

  Standard 0~0.15mm

(2) If it is within the standard value, use the push rod before replacement, If it is outside the standard value, select the push rod.

4 push rod selection

(1) Select the bushing rod to be installed using the calculation below.

Bush rod length to choose

Push before replacement + Rod length (Calculated according to item 3 The value of X) − Reference value of X

JA9968

<example>

Value of X calculated in item 3 above 0.35mm Bush rod before replacement When the length is 36.9mm When X=0mm

Push rod length to select = 36.9+ (0.35-0) =37.25 [mm]

When X=0.15mm

Push rod length to select = 36.9+ (0.35-0.15) =37.10 [an]

Therefore, select a push rod with a length of 37.10~37.25.

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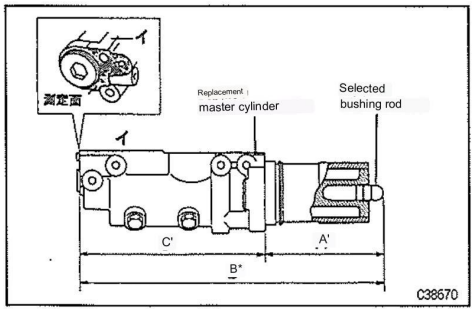

(2) Perform the work in the previous section 2 using the push rod selected in (1), Calculate the A' (or B') dimension again. (3) Using the A' (or B') dimension calculated in (2), perform the work in the previous section 3. and confirm that the value of X is within the standard value.

times house times
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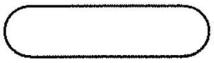
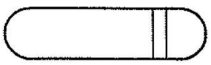
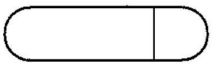
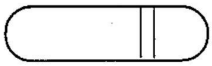
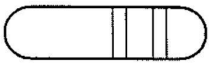
<Reference> Length of push rod for replenishment

outside 覗	part number	Bush rod length [mm]	outside 覗	quality	bush rod 長さ [mm]
	47261-24110	36.3		47261-24180	36.45
	47261-24120	36.6		47261-24190	36.75
	47261-24130	36.9		47261-24200	37.05
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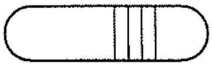	47261-24150	37.5		47261-24220	37.65
	47261-24160	37.8	D.	47261-24230	37.95
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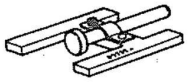
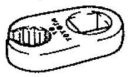
T0048713

brake booster

(vacuum type)

supplies

SST

	09737-00010	Brake booster bush rod gauge	Gap between master cylinder and push rod |For adjustment
tool			
	09023-00100	union nut wrench	For disconnecting and connecting brake tubes

針 器

	BBT-1TB	portable brake booster tester (Treated like a banzai)	For checking the function of brake booster

Oils and fats Others

Toyota genuine brake fluid 2500H 32503	For brake air bleeding
Toyota genuine MP grease No. 2 30204	For push rod clevis pin application

12

Congratulations times
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T0049714

Functional check

Brake booster simple inspection

1 Booster airtight function check

(1) Let the engine idle for 1 to 2 minutes and then stop. (2) Operate the brake pedal several times with the same amount of force as you would normally use the brake. and check for changes in pedal height. Standard The height of the pedal when pressed the second and third time compared to the first time (The interval between the first and second and second and third times is about 5 seconds or more)

2 Booster operation check

(1) With the engine stopped, press the brake pedal several times with the same amount of force. Check that the height of the pedal does not change by stepping on it.

(2) Start the engine with the brake pedal depressed and check the pedal height. Check for changes.

Kajun When starting the engine with the pedal depressed, the pedal goes a little further in.

3 Booster load airtight function check

(1) Depress the brake pedal while the engine is running, stop the engine, hold it for 30 seconds, and check the change in pedal height. Standard: There is no change in pedal height.

Inspection using brake booster tester

1 Connecting the portable brake booster tester (1)

Connect the portable brake booster tester as shown in the diagram and bleed the air from the tester.

2 Airtight function check

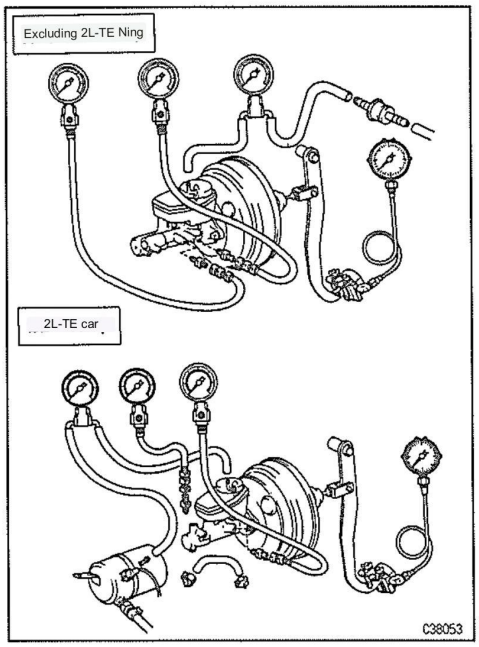
(1) Start the engine and stop the engine at negative pressure of 66.6KPa {500mmHg} and check for changes in negative pressure.

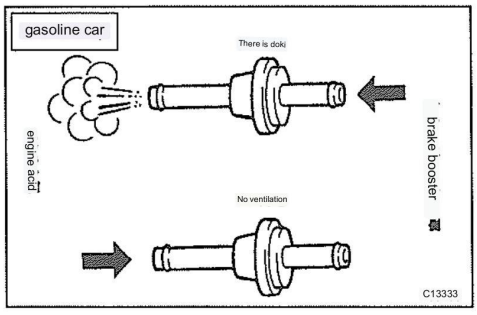
Criteria: After stopping the engine, there is no drop in negative pressure for 15 seconds. (2) Start the engine and press the brake pedal with a force of 196N (20kgf).

Stop the engine at a negative pressure of 66.6KPa {500mmHg} and check the change in negative pressure.

Check. Standard

Negative pressure drop for 15 seconds after engine stop is 3.3KPa {25mmHg} 以内





check valve inspection

1 Vacuum check valve ventilation inspection

(1) Remove the vacuum check valve and check the ventilation.

注意 If it is defective, replace the valve.

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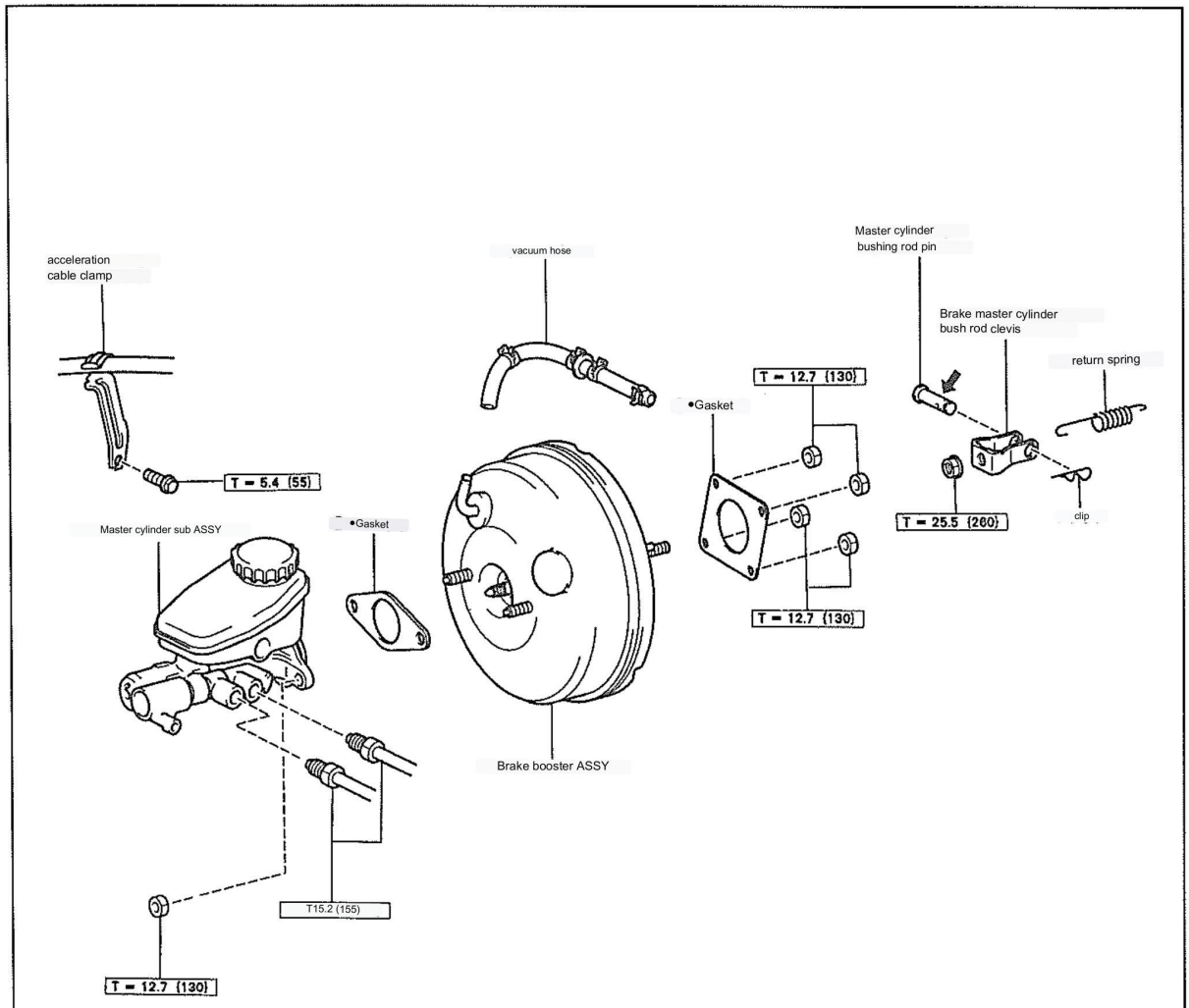
T0049715

brake booster

Detachment configuration diagram



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Toyota genuine MP grease No.2 application ●····· Non-reusable parts □·· ··· Tightening torque [N· m{kgf· m}]

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バキュームリザーバー

Preparation product

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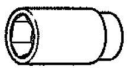	09816-30010	oil pressure switch socket	Vacuum warning switch removal/removal

Oils and fats and others

Seal packing black 50902		[For vacuum check valve application]

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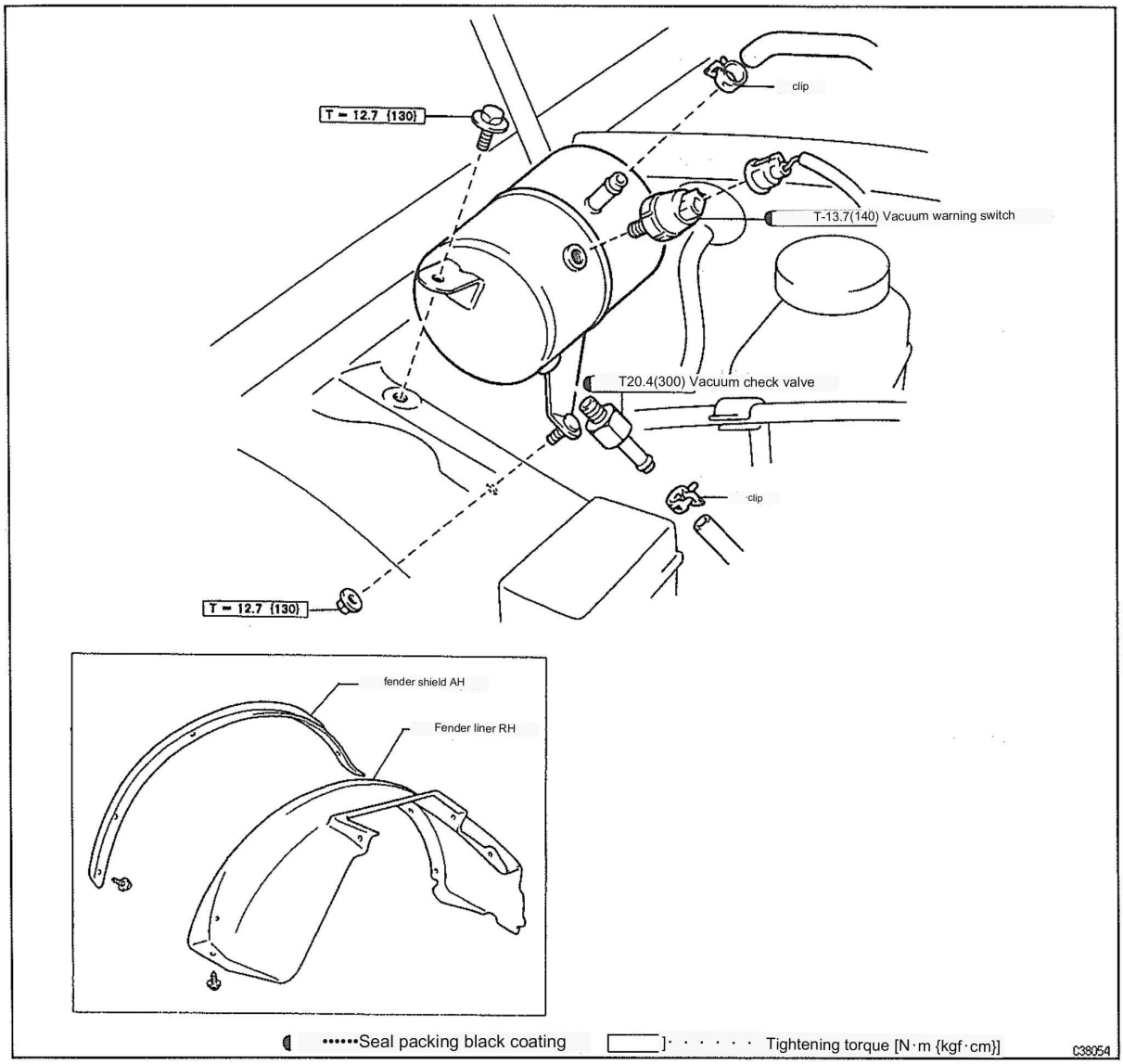
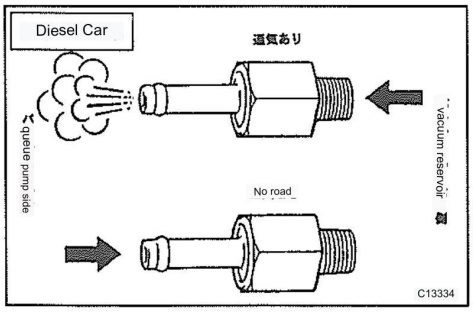
T0040717

vacuum reservoir

Detachment configuration diagram





check valve inspection

1 Vacuum check valve ventilation check

(1) Remove the vacuum check valve and check the ventilation.

注意 If defective, replace the valve.

(2) Clean the threaded part of the vacuum check valve with white gasoline, apply seal packing black, and assemble it. Apply

注意 seal packing black to only two threads from the threaded end.

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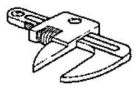
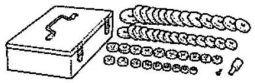
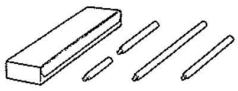
T0049716

vacuum pump

Preparation items

S S T

	09922-10010	variable open wrench	Vacuum hose union removal and removal
	09950-60010	Ribracer set	
	(09951-00400)	Ribracer 40	For oil seal installation
	09950-70010	Handle set	
	(09951-07150)	Handle 150	For oil seal installation

soup bowl

Caliper (0~200mm)			For blade inspection
		20201	
	BBT-1TB	portable brake booster tester	For vacuum pump inspection
		Treated like a banzai	

12

Oils and fats Others

engine oil			For rotor and blade application
		32101	

Congratulations times
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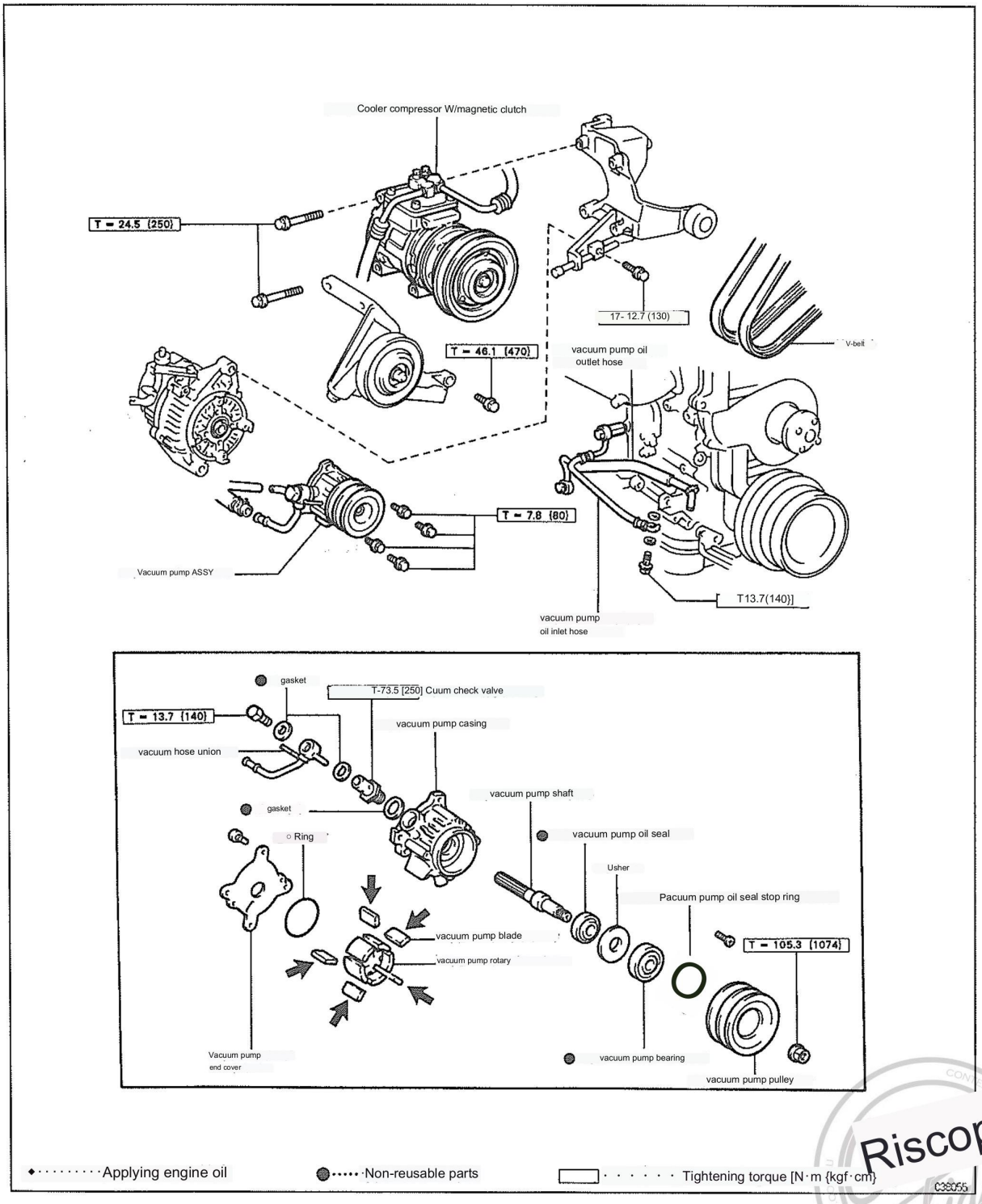
T0049710

vacuum pump

Detachable exploded configuration diagram



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Riscop
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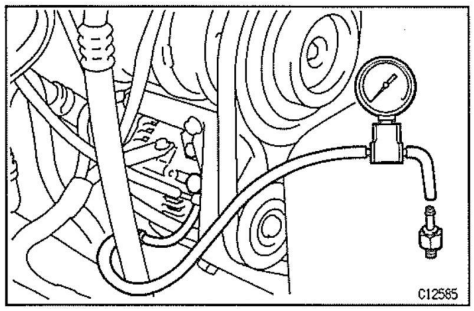


Vacuum pump inspection

1 Vacuum pump inspection

(1) Vacuum hose from vacuum reservoir check valve

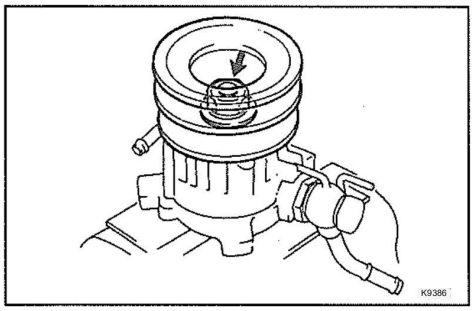
Remove.

(2) Portable brake booster tester to vacuum hose

Connect and measure negative pressure.

Standard value 86.7kPa

{650mmHg) (3) Remove the tester and connect the Pacuum hose.

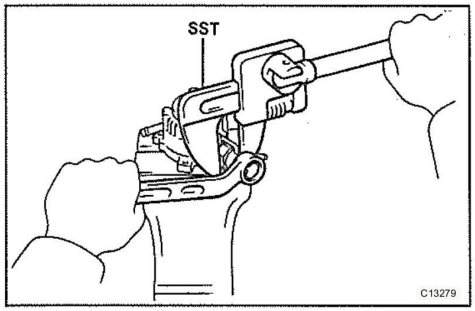


Points to note when disassembling vacuum pump ASSY

1 Remove vacuum pump pulley

(1) Fix the pump shaft in a vise via an aluminum plate.

(2) Remove the nut and remove the pulley.



2 Remove vacuum hose union and check valve

(1) Fix the check valve using SST, union bolt,

Remove the onion and 2 gaskets.

Be sure to use SST in the wrong direction.

(2) Remove the check valve.

(3) Remove the gasket.

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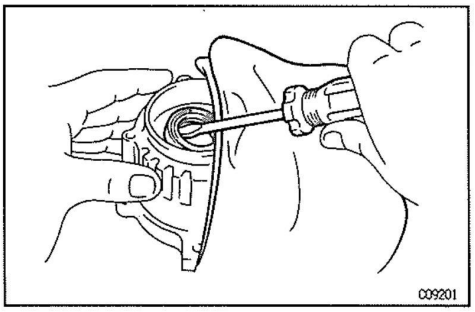
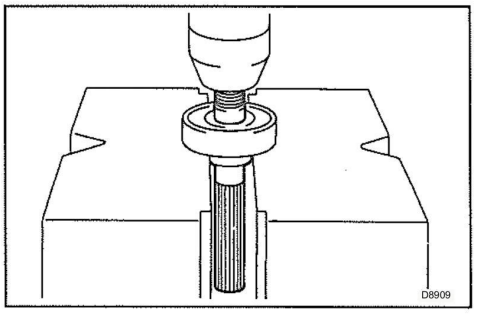


3 Vacuum pump oil seal removal

(1) Use a screwdriver to remove the oil seal.

To protect the casing, line it with a cloth.



4 Vacuum pump bearing removal

(1) Using a press, remove the bearing from the pump shaft.

Hui family times
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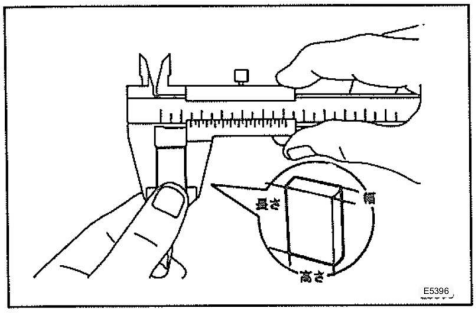


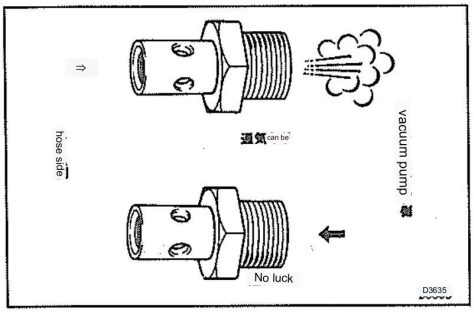
Vacuum pump component inspection

1 Blade inspection

(1) Visually inspect for damage.

(2) Measure the height of the blade using calipers.

limit **12.2mm**



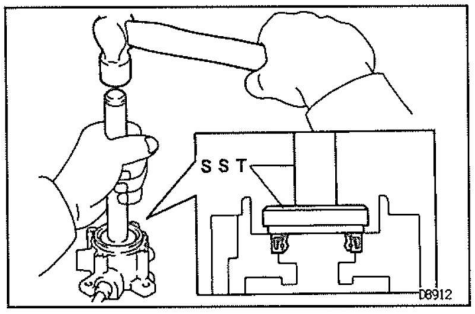
2 Check valve operation check

(1) Check that there is ventilation from the hose side to the pump side, and that there is no ventilation from the pump side to the hose side. If defective, replace the check valve.

3 Caging inspection

(1) Check that there are no scratches on the inside of the casing.

If it is defective, replace the vacuum pump ASSY.

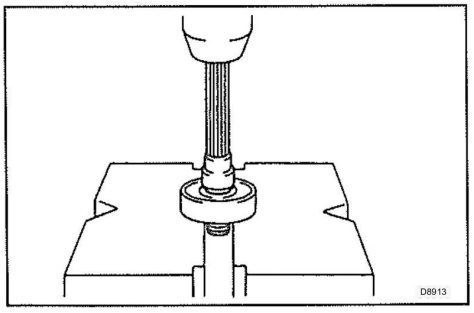


Vacuum pump ASSY Precautions for assembly work

1 Assembling the vacuum pump oil seal (1) Assemble the new oil seal using SST.

S S T 09951-00400 09951-07150

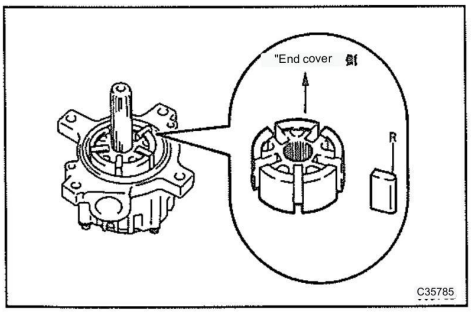
2 Assembling the washer



3 Assembling the vacuum pump bearing

(1) Using a press, assemble the new bearing onto the pump shaft.

wear.



4 Vacuum pump rotor and blade assembly

(1) Apply engine oil to the pump rotor and attach it to the shaft with the concave side facing the end cover.

(2) Apply engine oil to the blades and assemble them to the rotor with the R part of the blades facing outward.

注意 - Do not place the blade on the eccentric ring of the casing.
Do not install the blade in the wrong direction.

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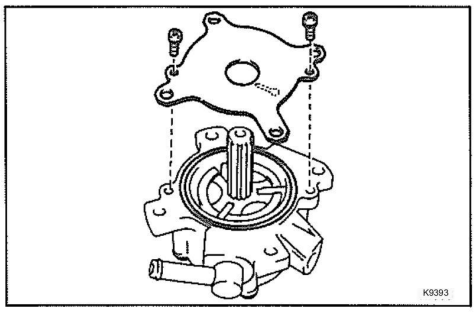
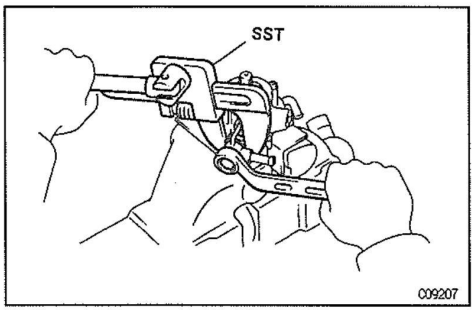


5 Assembling the vacuum pump end cover (1) Assemble the new O-ring to the casing.

(2) Assemble the end cover using two screws.



6 Assembling the check valve and vacuum hose union

(1) Fix the pump shaft to the vise via the aluminum plate.

(2) Assemble the check valve using a new gasket. (3) Secure the union using SST and insert two new gaskets. and assemble the union and union bolt.

SST 09922-10010

- Do not use the wrong direction of SST.
- Align the union positioning pin with the casing.

12

Congratulations times
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T0048720

front, rear brake

Preparation

product

tool

plastic hammer	12101	Cylinder slide pin dust boot removal and removal

instrument

Dial gauge	21201	For checking disc runout
vernier caliper	20202	For disc thickness measurement

Oils and fats/others

Toyota genuine brake fluid 2500H	32503	For brake air bleeding
Toyota genuine rubber grease	30902	For applying to each part
Toyota genuine disc brake grease	30504	For anti-skil shim application
Toyota genuine disc brake grease II	30507	For anti-skil shim application
wire	52015	For hanging cylinders
piece of wood	53601	For piston removal (twin pot car)

12

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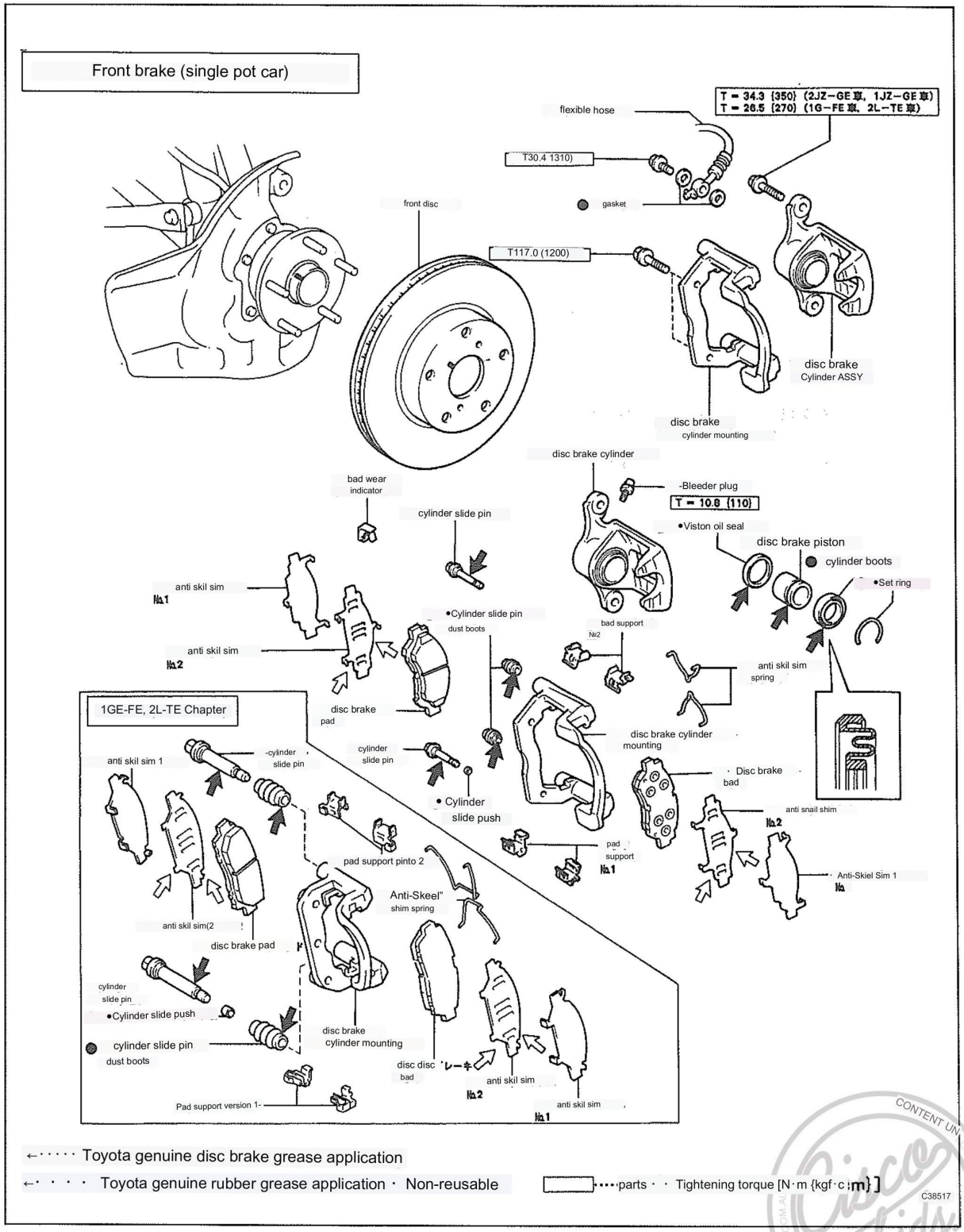
T0049721

Exploded configuration diagram



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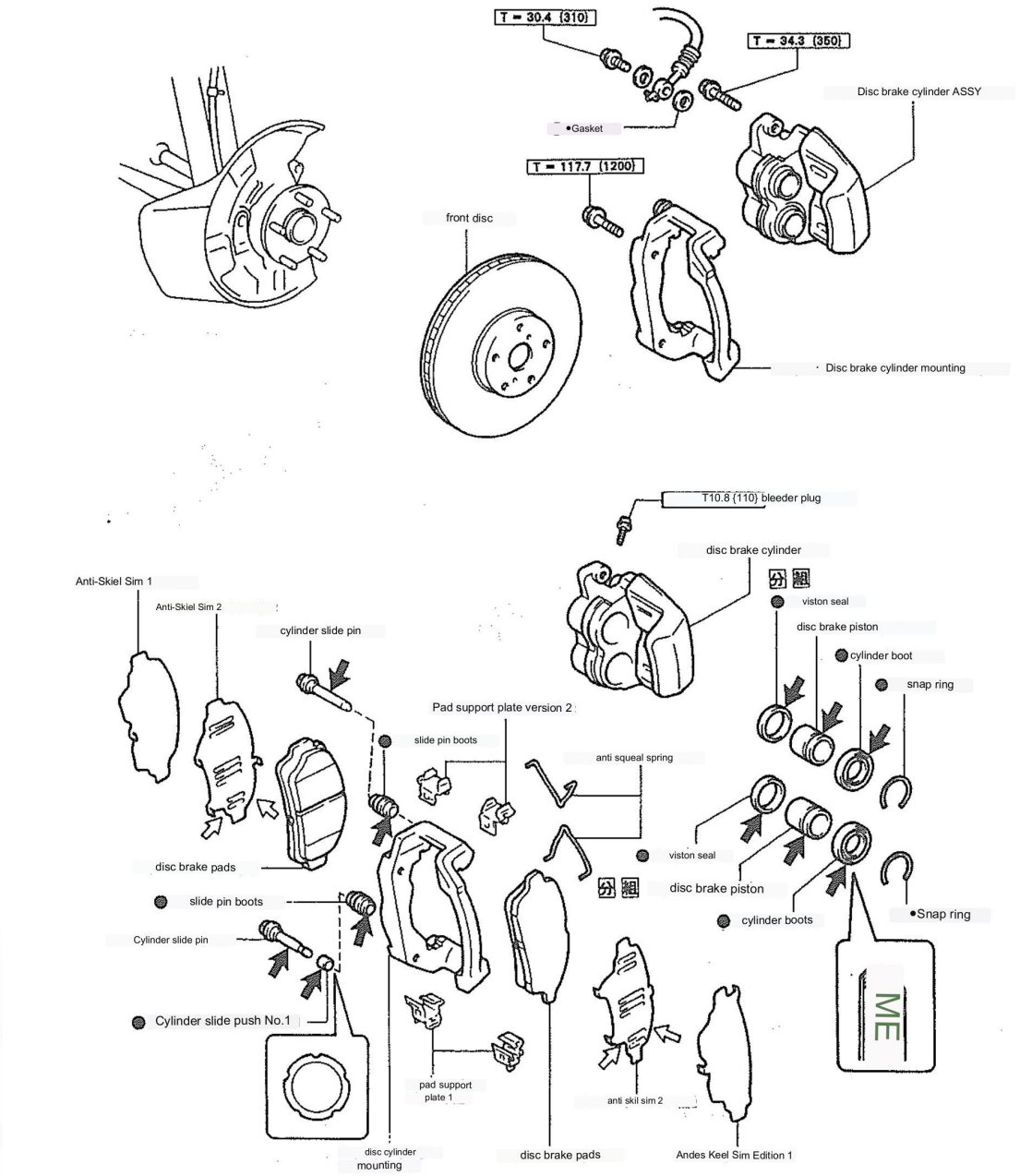
Front brake (twin pot car)



⇦···· Toyota genuine disc brake grease application
◆···· Toyota genuine rubber grease application
●····Non-reusable parts
▭·····Tightening torque [N·m {kgf·cm}]

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ME

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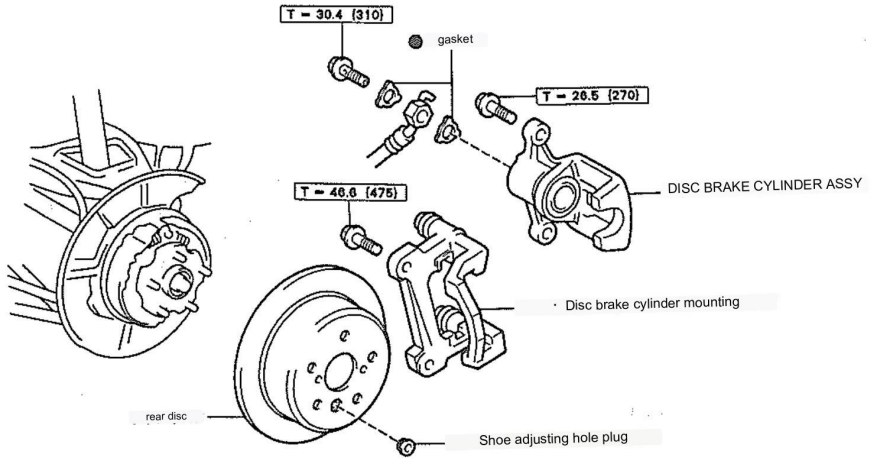
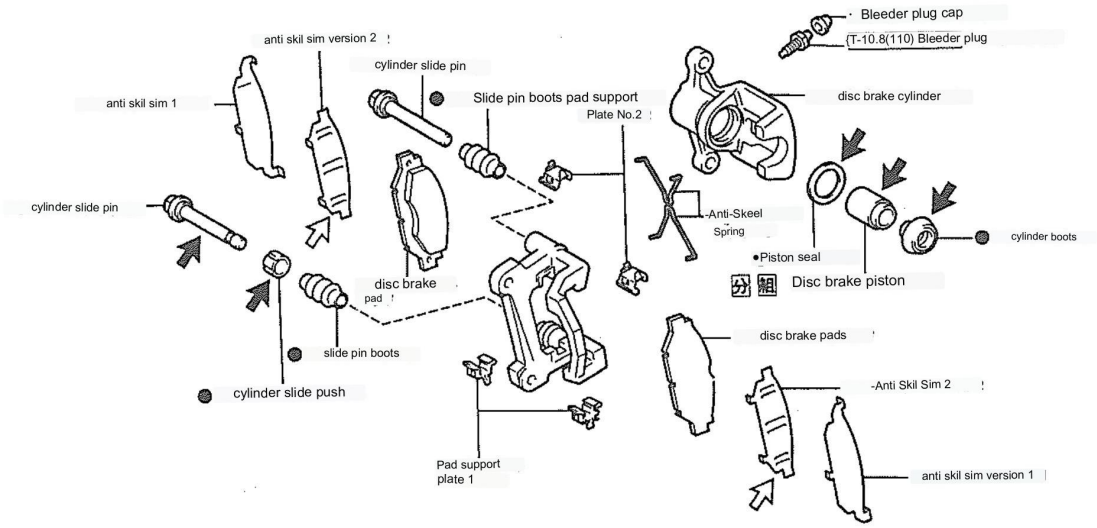
C38018

rear brake





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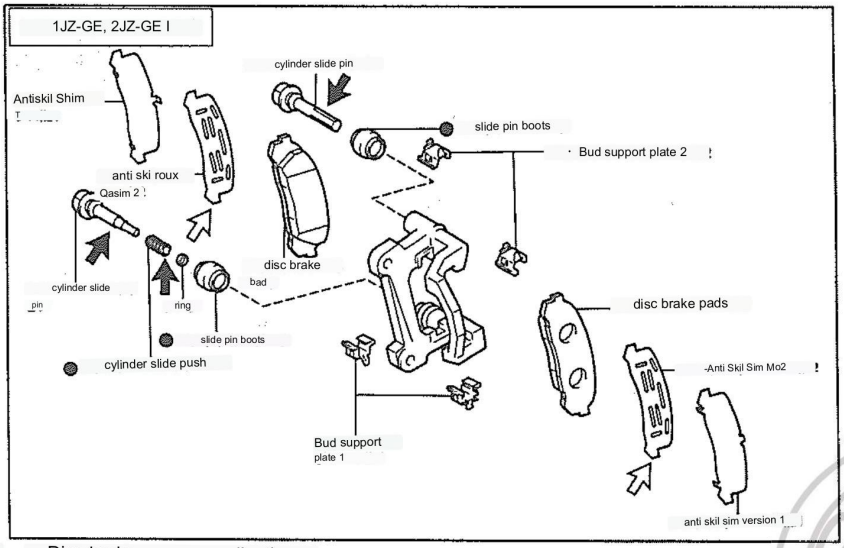

Disc brake grease application

Genuine Toyota • Genuine Toyota Rubber Grease Application • Genuine Toyota • Genuine Toyota Rubber Grease Application

□ • .....Tightening torque [N • m[kgf • cm]

C33101

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Inspection and replacement of front and rear brake components

Caution Disc brake pad kits (disc brake pads) must be equipped with an anti-skil shim kit (pad wear indicator).

Replace with anti-skil shims No.1~No.3) at the same time.

1 Inspecting pad thickness

Pepper	front		Rear	
	When new [mm]	Limit [mm]	Product time [mm]	When new []
1G-FE 2L-TE	12.0	1.0	12.0	1.0
1JZ-GE 2JZ-GE	11.0	1.0	10.0	1.0
1JZ-GTE	11.0	1.0	12.0	1.0

JB3252

2 Pad support plate inspection

(1) With the pad attached to the cylinder mounting, clean the pad contact surface with brake cleaner, etc., and check the support plate for looseness, deformation, cracks, looseness, or foreign matter that is difficult to remove.

(2) When installing the pad, check that the support has sufficient force and that the pad does not fall off easily after installation.

3 Anti-squeal spring inspection

(1) Clean with brake cleaner, etc., and check for deformation and rust.

(2) Assemble the spring, rotate the disc rotor, and check that there is no contact (dragging) between the pad and rotor.

4 Checking the thickness of the disc

torture	front		Rear	
	When new [mm]	Limit [Gm]	When new [mm]	When new [mm]
1G-FE 2L-TE	22.0	20.0	10.0	8,0
1JZ-GE 2JZ—GE	25.0	23.0	10.0	8.0
1JZ-GTE	32.0	30.0	16.0	14.0

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JB3741

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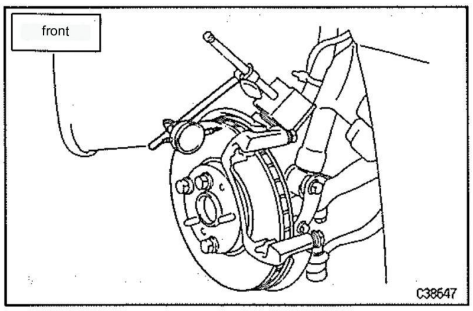
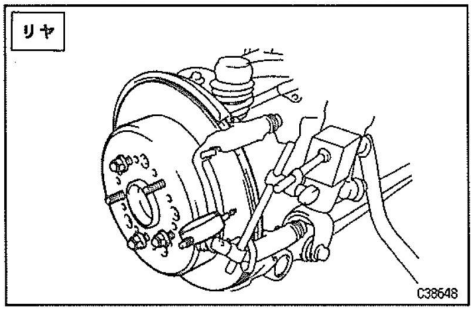
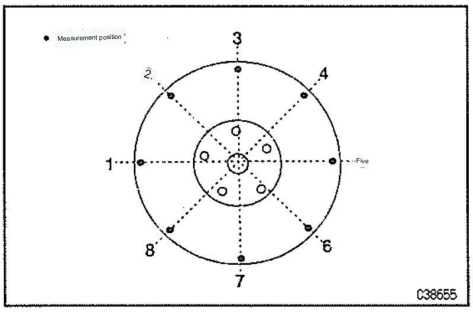






5 Inspecting disc runout

Limit 0.05mm (10mm inside from the outer disc)

(Caution) · Before inspecting the disc for vibration, check for looseness and vibration in the wheel bearing.

Check this.

(See "Suspension & Axle" and "Front Axle")

(See ``Suspension & Axle'' - ``Rear Axle")

· If the disc shake exceeds the limit even if you change the mounting position

Grind or replace the disc.

6 Inspection of disc wall thickness difference

(1) Use a micrometer to measure the thickness of the disc at 8 locations (10 mm inside from the disc's outer circumference), and calculate the uneven friction by subtracting the minimum value from the maximum value.

Check for wear.

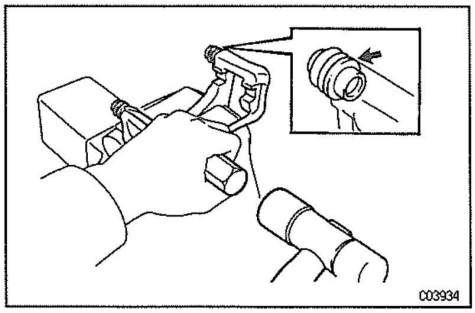
site	Limit [mm]
front	0.015
Rear	0.020

The uneven wear of the disc has exceeded the limit, and even after grinding, the thickness limit has not been exceeded.

If it is too rough, grind the disc, and if it is too much, replace it.

7 disk replacement

(1) Attach a new disc to the axle, measure runout, and select the mounting position that minimizes runout. (Front disc) <Reference> Do not install the rear disc by changing its position because there is an adjustment hole for the parking brake shoe.



8 Cylinder slide pin dust boot replacement

(Excluding 1G-FE, 1JZ-GTE, 2L-TE vehicles [rear

(TIP) brake]) Cylinder mounting is fixed in a vise via an aluminum plate. And don't tighten it too tightly. (1) Remove the dust boot ONTENT using a screwdriver and plastic hammer.

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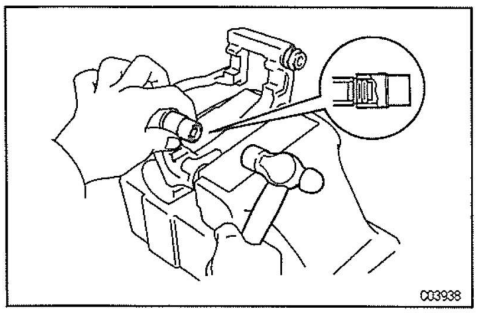
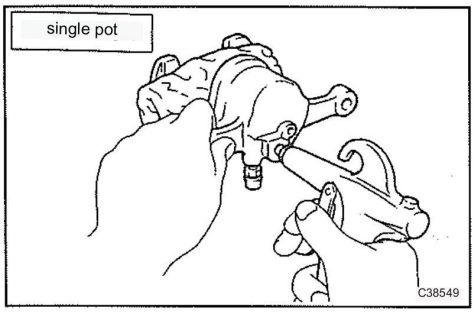


(2) Apply rubber grease to the inner surface of a new dust boot, and drive it into the cylinder mounting using a socket wrench (21mm) and a plastic hammer.



Front and rear disc brake cylinder disassembly,

Points to note during assembly work

1 Remove cylinder boot

2 Removal of piston and piston seal

(1) Remove the piston using an air gun.

注意 · Twin pot disc brake cylinder has one piston

Remove them one by one; do not remove both at the same time. · A thick corrugated coating is placed between the piston and cylinder to protect the piston.

Insert S etc.

· For twin pot cylinders, firmly sandwich a piece of wood wrapped in a cloth between the piston and the cylinder, which will not be removed, to prevent it from popping out.

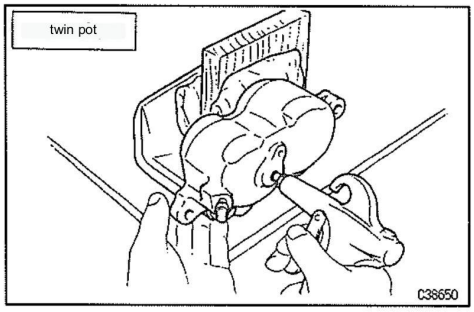
· The piston will pop out with great force, so be careful not to get your fingers caught.

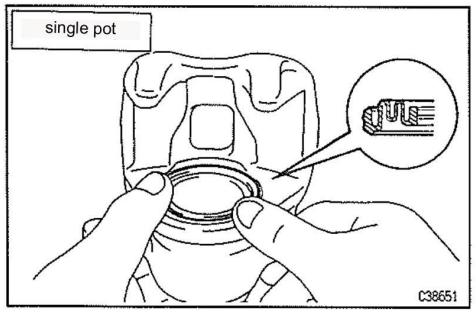
mean. ·

Do not allow fluid to scatter.

(2) Remove the piston seal using a thin blade screwdriver.

注意 Do not damage the inner surface of the cylinder or the seal groove.





3 Apply rubber grease

(Refer to "Detachment/Detachment Exploded Diagram")

4 Piston and piston seal assembly

5 Assembling the cylinder boot

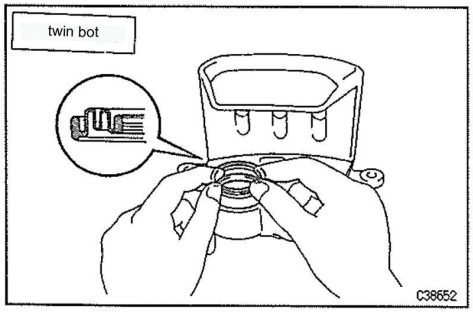
(Caution - Do not put the cylinder boot in the wrong direction.

- Fit the boot securely into the groove of the cylinder.

· Do not damage the boots when assembling the set ring. (Excluding 1G-FE, 1JZ-GTE, 2L-TE [Rear brake])

· Twinbot cylinder is the same as the other cylinder kit.

Replace them in the same way, and check the assembly of each piston.



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T0040724

パーキングブレーキ

Preparation

product

tool

	09704-10010 ブレーキアジャスティングツール	Yaichiku v-+ for adjustment

instrument

Recruitment (0~200mm) 20201	For disc inner diameter inspection

Oils, fats, flowers, etc.

Toyota genuine non-melt rub 30602	For applying to each part
ブレーキクリーナー 52201	For removing deposits inside the disc

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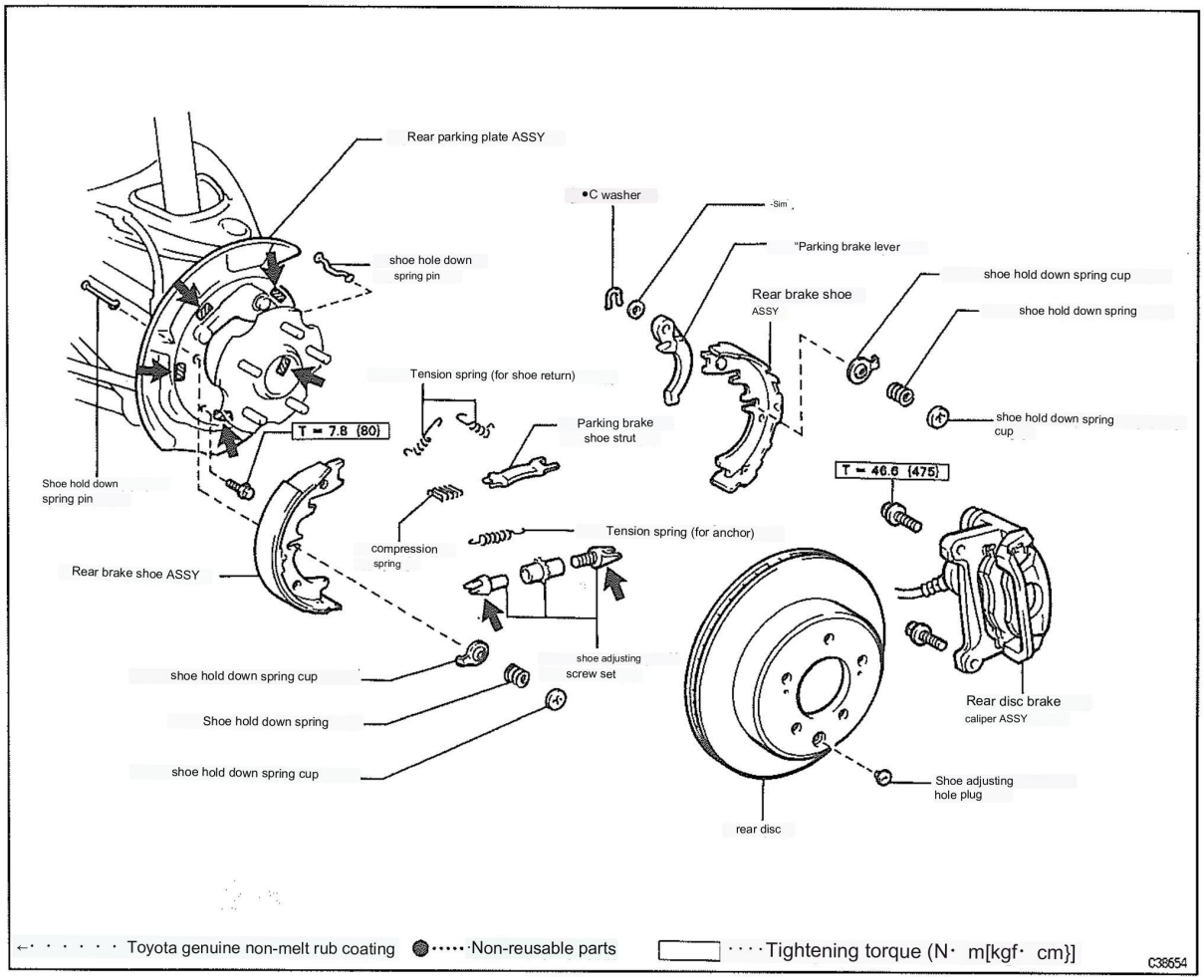
T0049725

Parking brake

Detachable exploded configuration diagram



12

Inspecting and replacing parking brake components

1 Check inner diameter of disc

When new [mm]	Limit [mm]
176.0	177.0

2 Inspecting the thickness of the shoe lining

2.0mm when new

Limit 1.0mm

NOTE To prevent one side effect, replace both the left and right sides of the vehicle as a set.

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Congratulations
times

3 Inspecting the contact between the shoe lining and the disc

(1) Apply chalk to the inner surface of the disc and rub it against the brake shoe.

match.

standard There are no significant hit defects.

If the contact is poor, polish the brake shoe lining.

Caution Wipe off the chalk after completing the inspection.

4 Assembling the parking brake shoe lever

(1) Use a new C washer to tighten the parking brake shoe lever.

Temporarily attach it to the parking brake shoe (rear side).

(2) Using a thickness gauge, measure the gap between the

parking brake shoe and the bar.

Standard height 0~0.35m

If it is outside the standard value, adjust by changing the thickness of the shim.

〈参考〉 Sim type

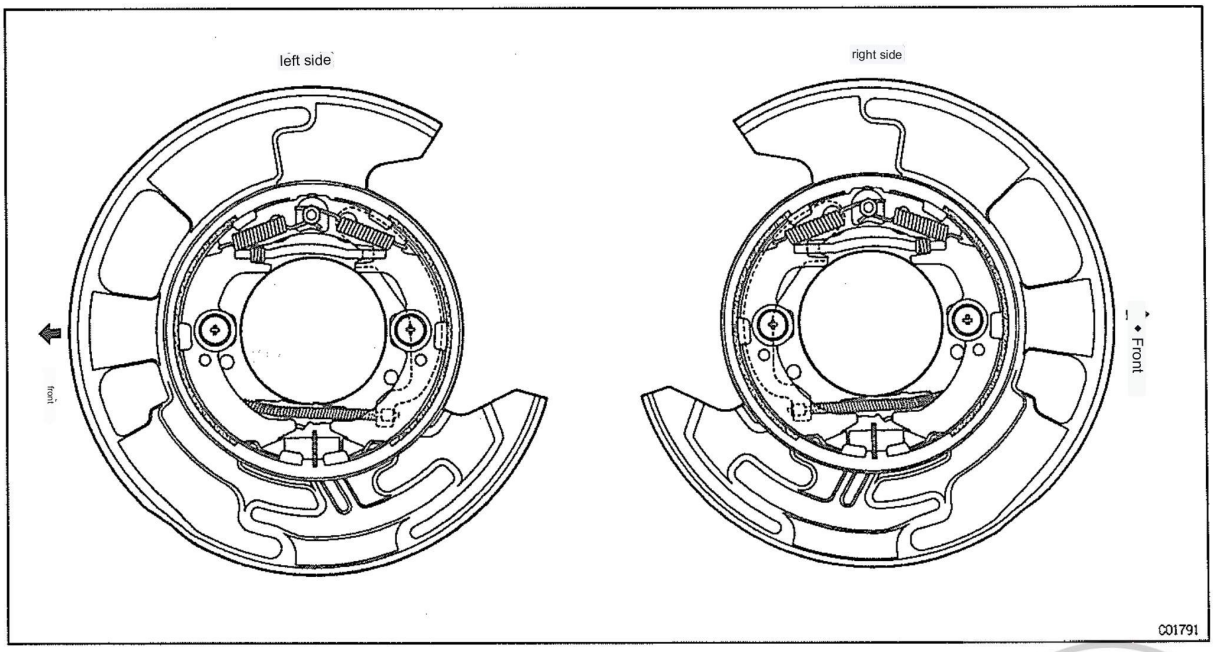
Shim thickness [mm]	part number
0.3	90564-09184
0.6	90564-09185
0.9	90564-09186

(3) Use pliers to secure the C washer.

parking brake assembly

1 Parking brake assembly inspection

(1) Check that each part is properly assembled.



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TD049720

parking brake lever & cable

supplies

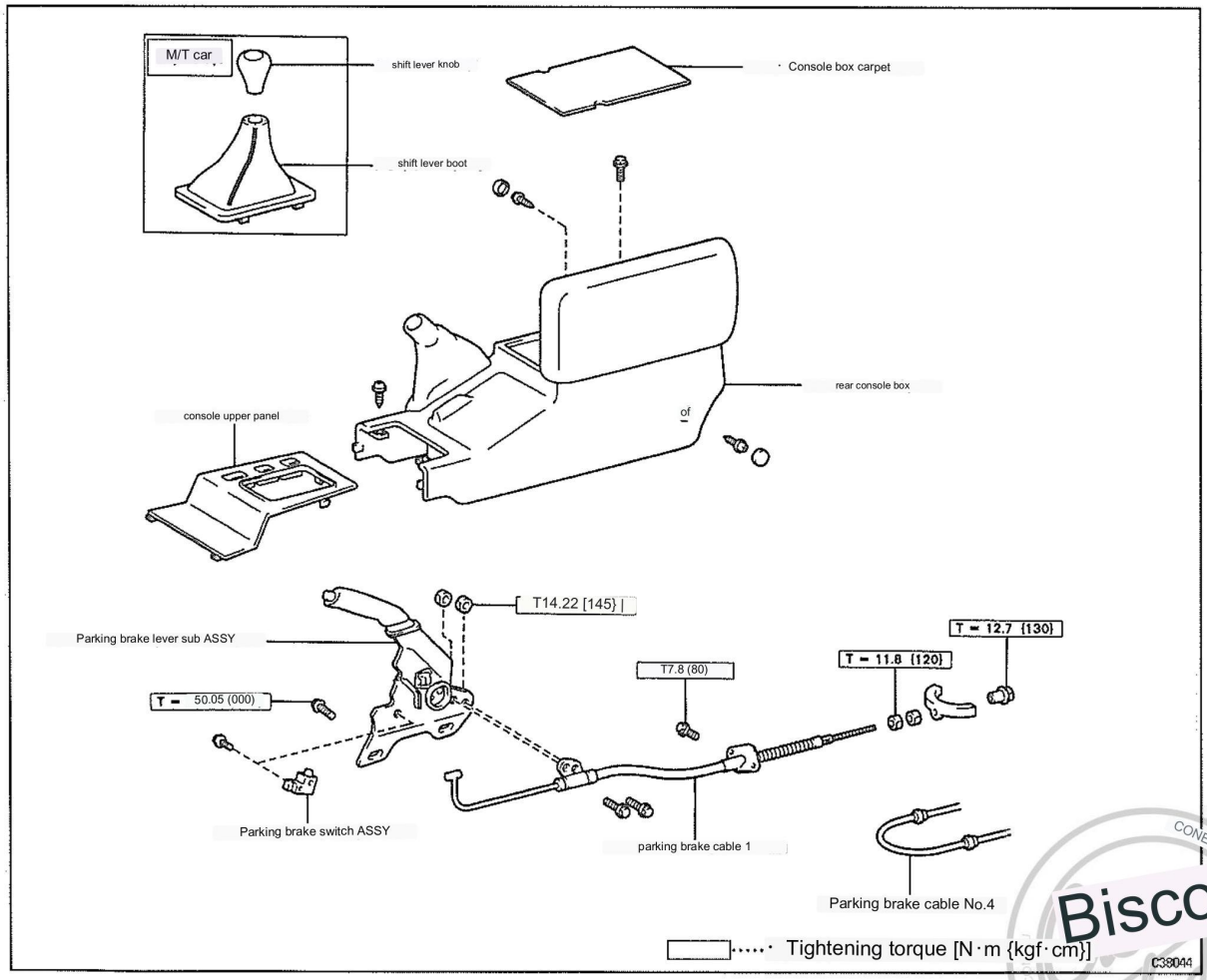
Oils and fats/others

Toyota genuine body grease	31003	For applying to each part

TD048727

Parking brake lever & front cable

Detachment configuration diagram



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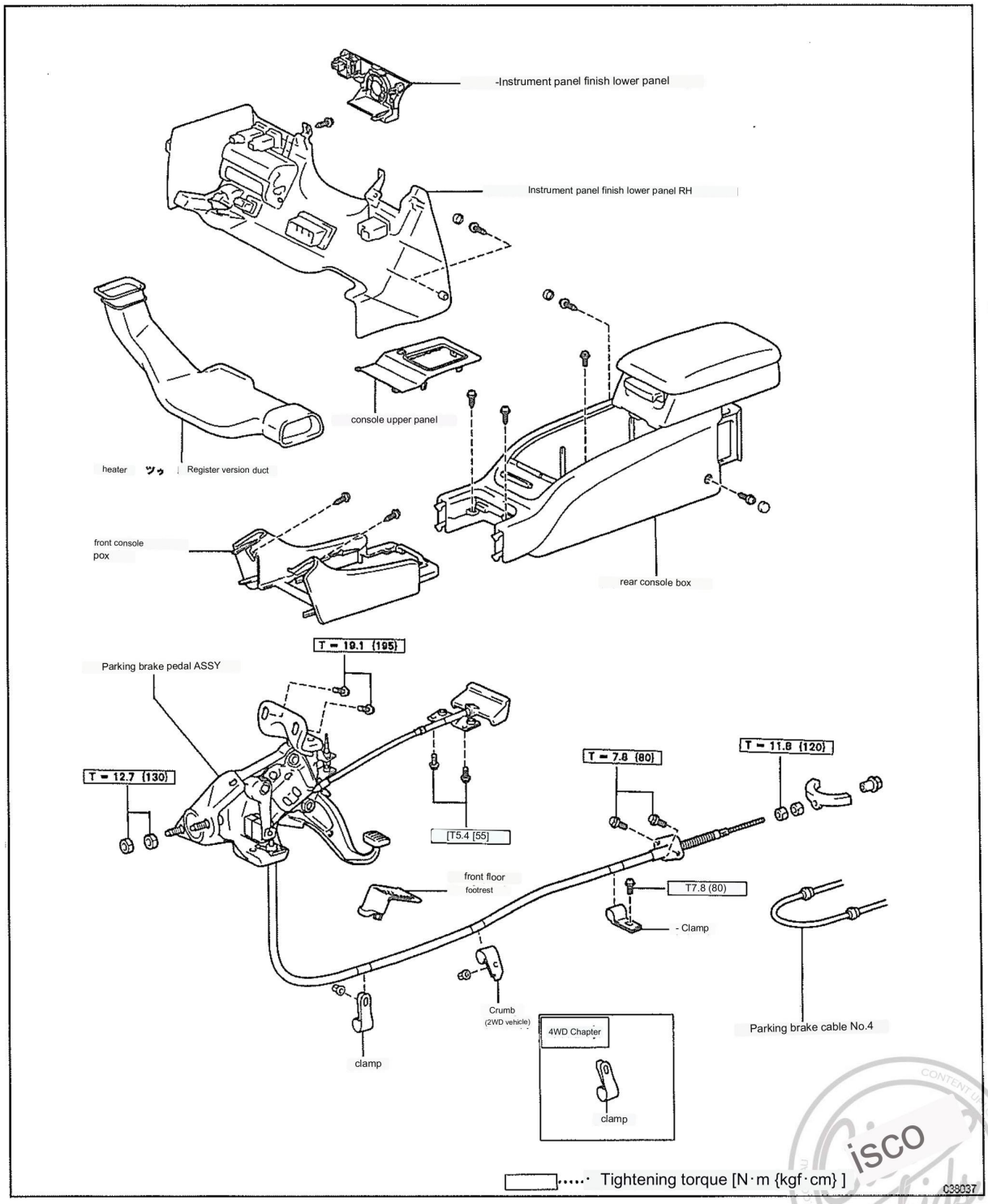
timesBox times house times

parking brake pedal & front cable

Detachment configuration diagram



gypsum
isco
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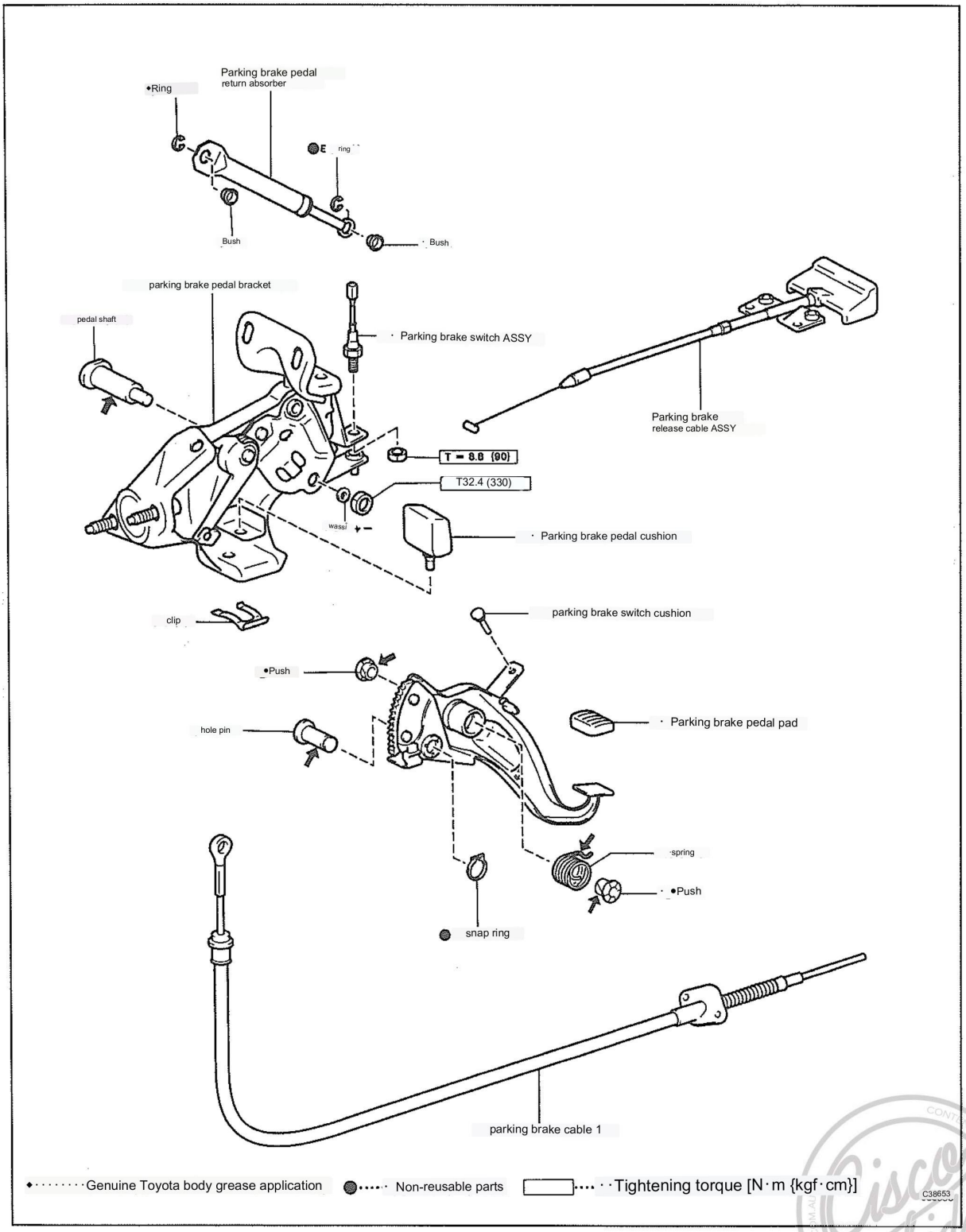
Exploded configuration diagram



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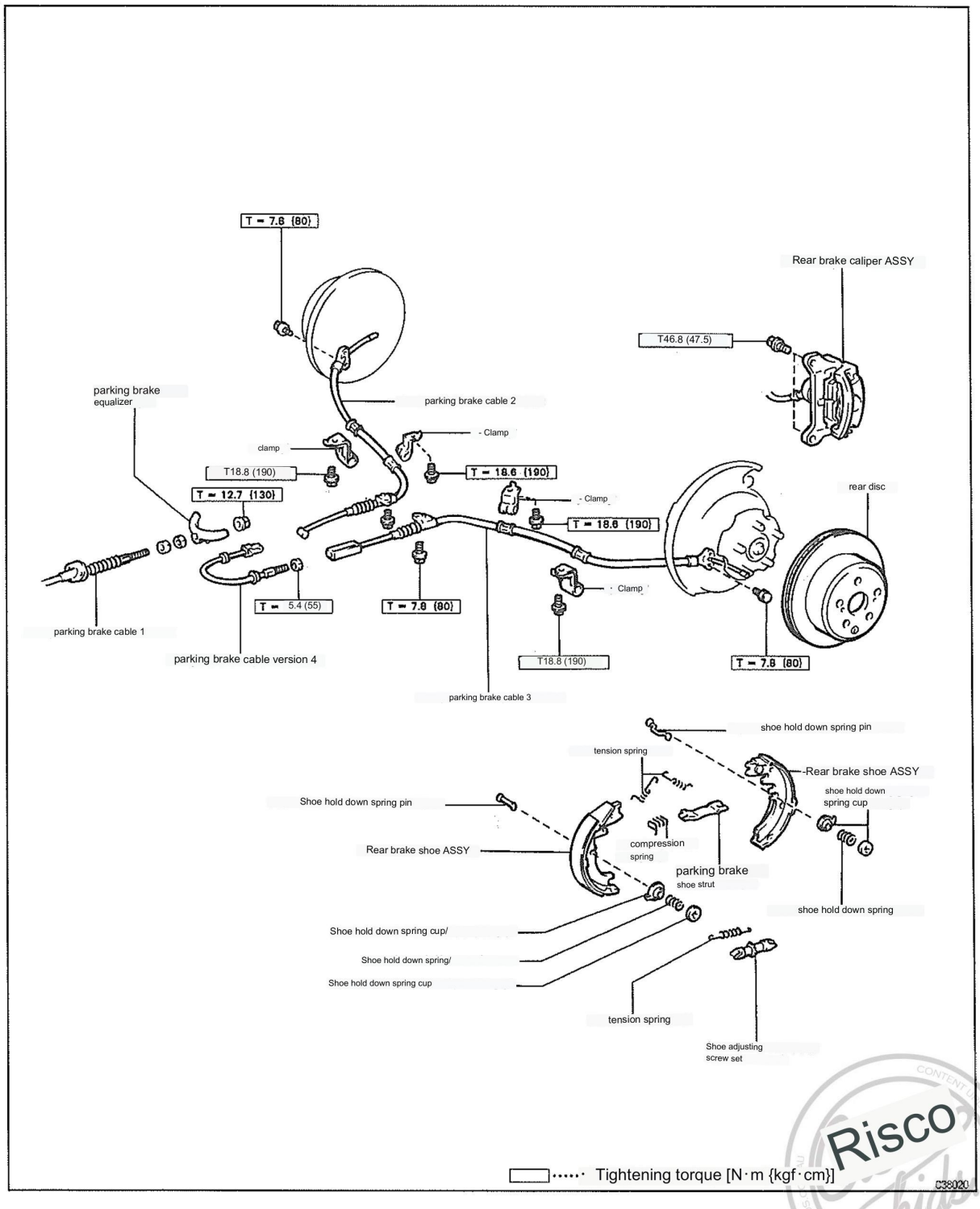
TOC49728

rear cable

Detachment configuration diagram



12

steamed noodles

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T0040728

P&B valve

supplies

tool

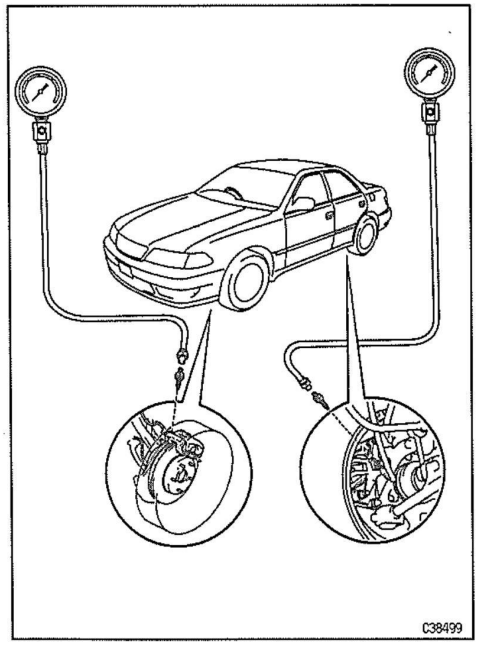
	09023-00100	union nut wrench	For disconnecting and connecting brake tubes

計 器

	09709-29017	LSPV gauge set	P & B valve function check

Oils and fats/others

Toyota genuine brake fluid 2500H 32503		For brake air bleeding



T0040750

Functional check

P & B valve function check

1 LSPV gauge installation

(1) Install the LSPV gauge and bleed air from the gauge.

- Check that there is no leakage of brake fluid.
- Check that the brake pedal pressure is constant and that there is no drop in oil pressure.

12

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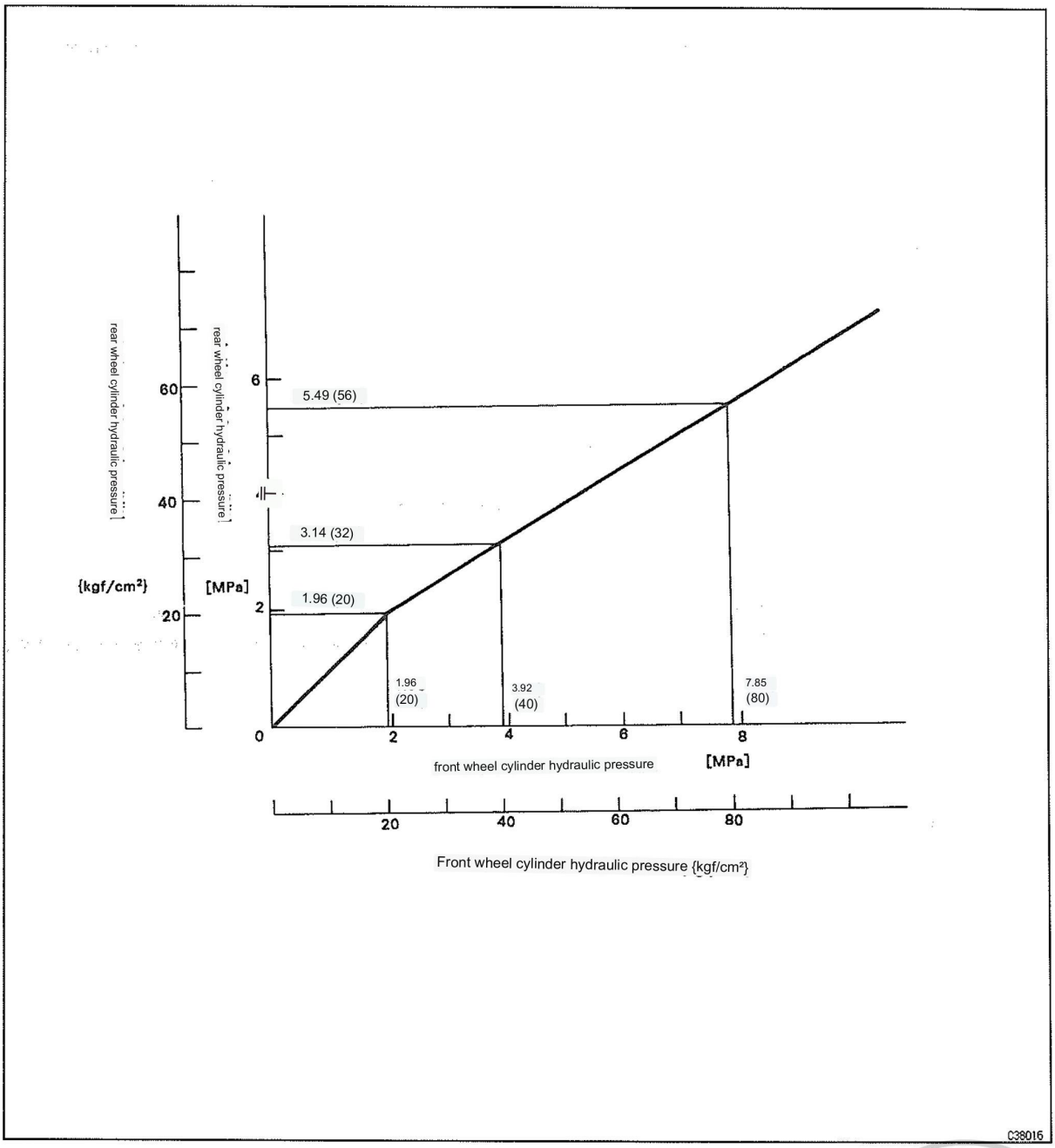
2 Hydraulic inspection

注意 For hydro booster vehicles, turn on the ignition switch and wait for the pump motor to stop before inspecting it.

～ Standards



〈参考〉 If the P& B valve is defective, replace the master cylinder ASSY (excluding vehicles equipped with 2L-TE)

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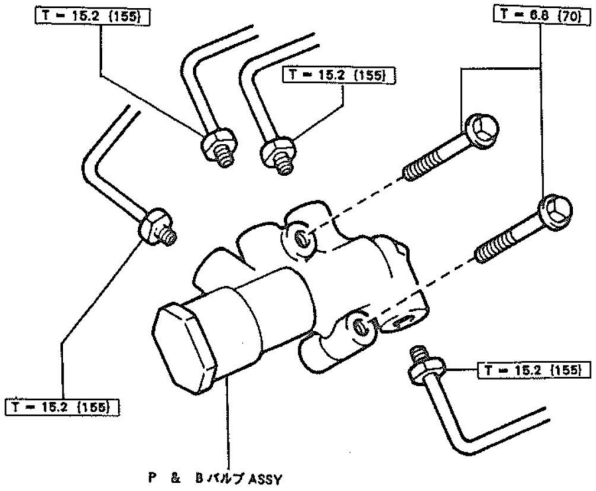
P&B Dai-Ding (vehicle equipped with 2L-TE)

Delivery configuration diagram



□ ····· Product attachment below [N·m {kgf.cm}]

C38017

Disassembly and vertical adjustment of P&B equipment ﾚﾍﾟ

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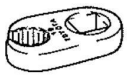
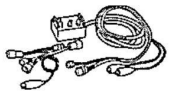
Anti-lock brake system (ABS) & traction control Roll System (TRC)

supplies

tool

	09023-00100	union nut wrench	For disconnecting and connecting brake tubes

soup bowl

	09082-00012	toyota electrical tester	For each part point school
	(09083-00060)	Mini test lead	Each part is for use as a pointer.
	09843-18020	Diagnosis check wire	Diagnosis connector for short circuit
	09990-00141	ABS actuator checker and subharness	For checking brake actuator operation
	09990-00250	ABS actuator checker sub harness G	For checking brake actuator operation
	09990-00300	ABS actuator :checker sub harness!	For checking brake actuator operation (excluding vehicles equipped with TRC)
	09990-00360	ABS actuator checker sub harness L	For checking brake actuator operation
	09990-00450	ABS actuator checker sub harness P	For checking brake actuator operation (TRC equipped vehicle)
	09991-50100	Toyota Diagnosis Reader Set	For reading diagnosis codes

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	09991-50320 Program IC card Engine system 3	For reading diagnosis codes
Diagnosis check wire 09843-18020	70250	For DLC3 connector short circuit
Oscilloscope	20501	For oscilloscope waveform measurement

Oils and fats/others

Toyota genuine brake fluid 2500H	32503	For air release

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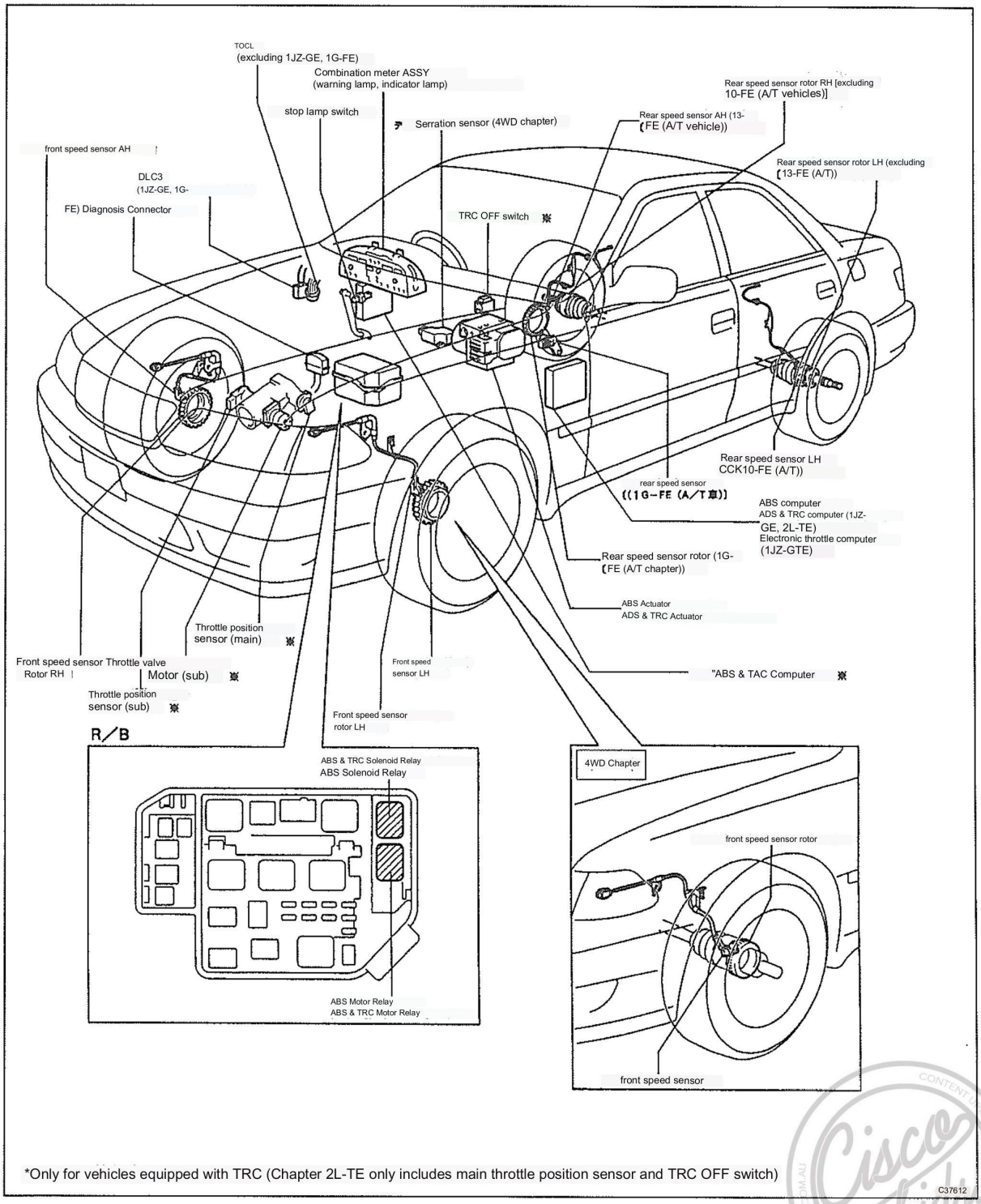
T0049028

Parts layout diagram



*Only for vehicles equipped with TRC (Chapter 2L-TE only includes main throttle position sensor and TRC OFF switch)

C37612

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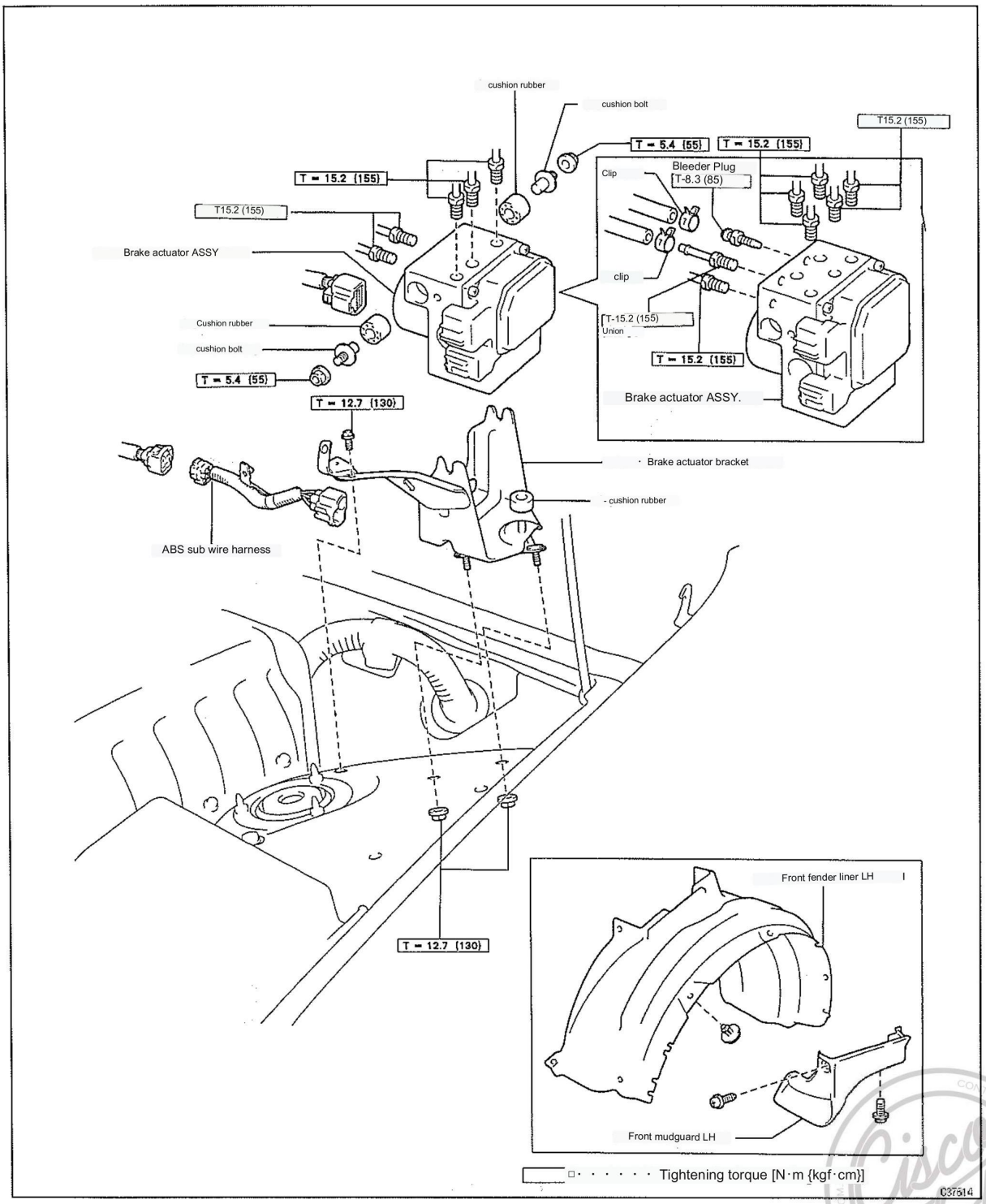
T0040031

brake actuator

Disassembled configuration diagram



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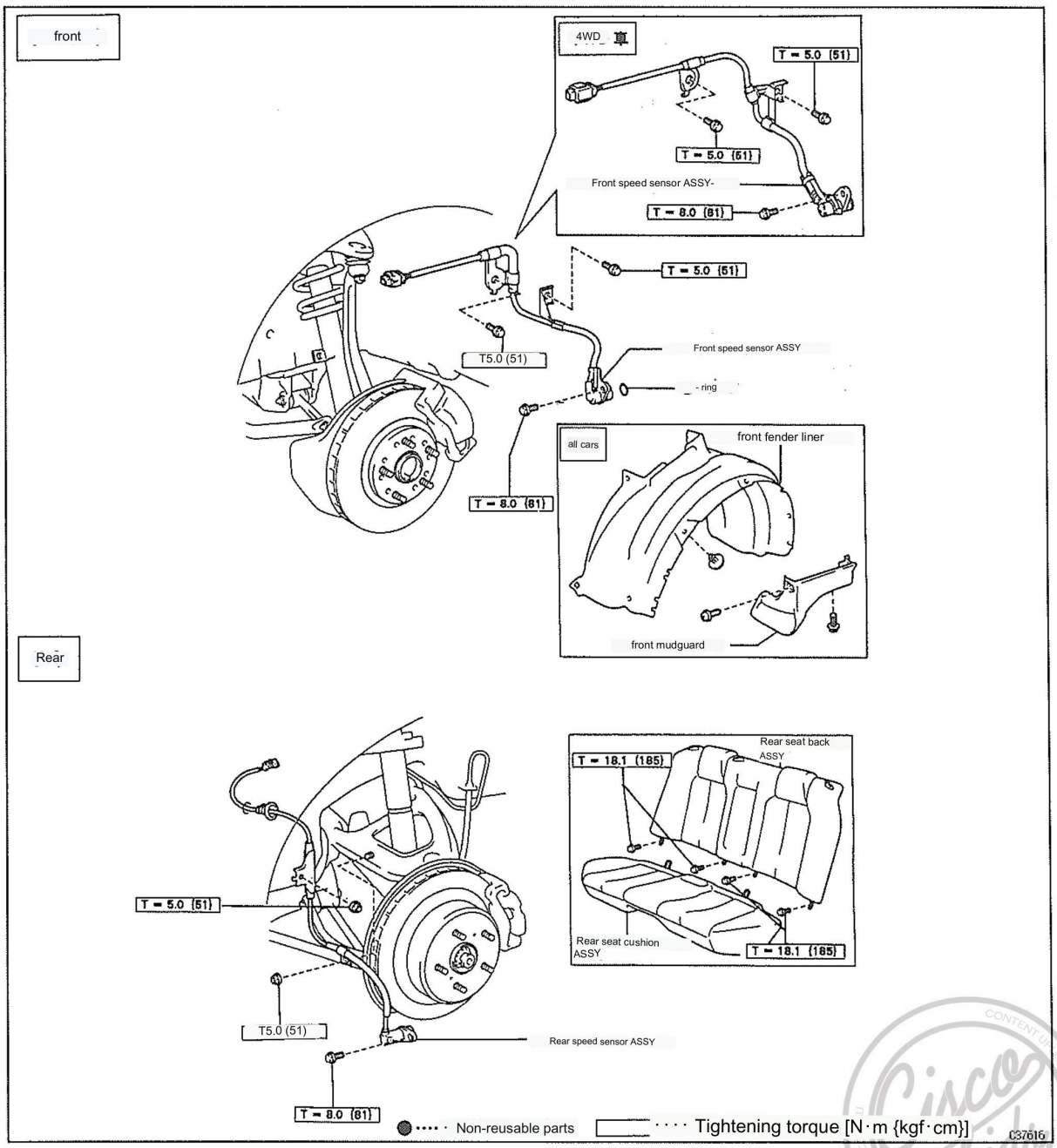
T0049032

speed sensor

Detachment configuration diagram

Make sure that there is no foreign matter attached to the tip of the speed sensor or the mounting part.



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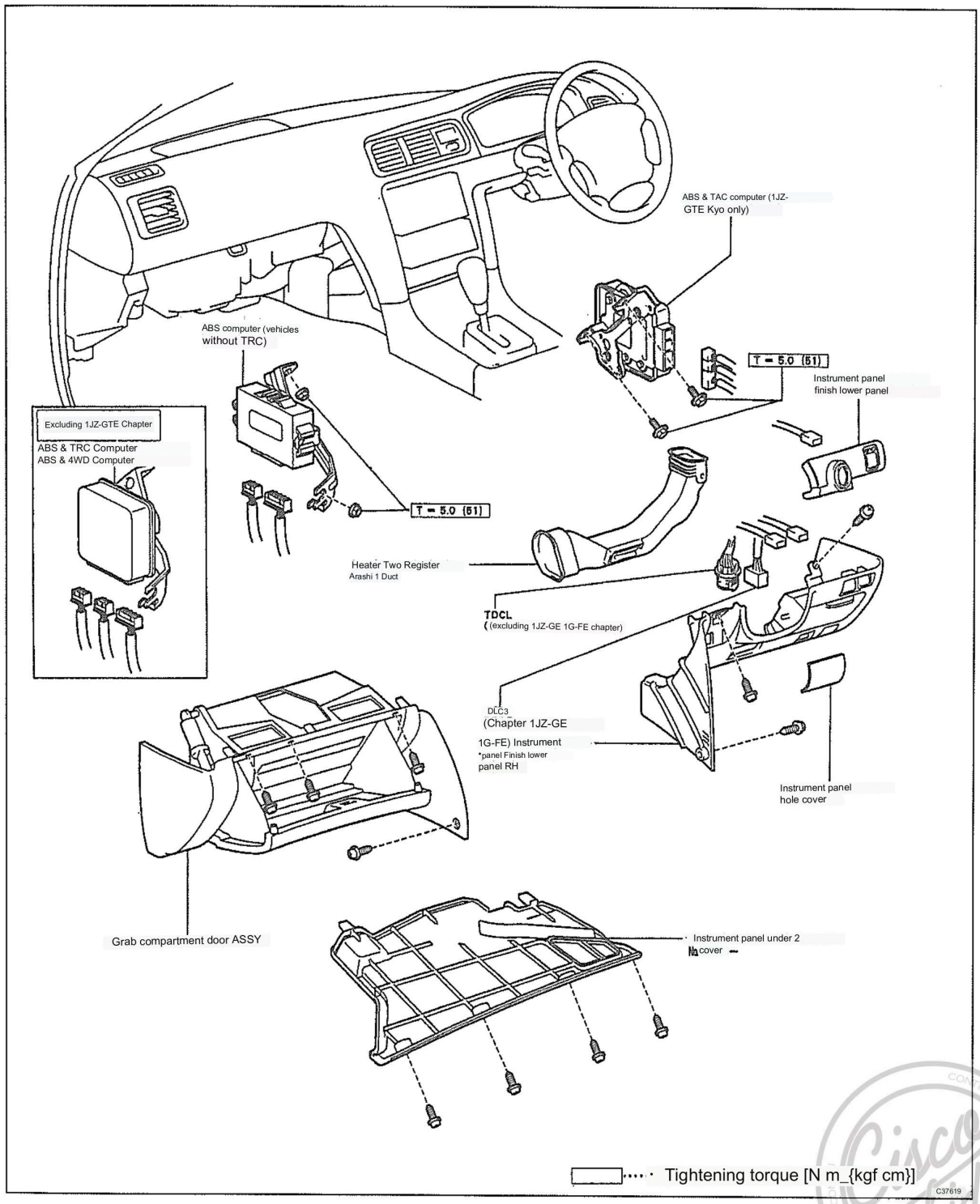
ABS (ABS & TRC) Computer

Detachment configuration diagram



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Main throttle position sensor

("1JZ-GE Engine"-"EFI System"-"Throttle Body"

(See "1JZ -GTE engine" "EFI System" - "Throttle Body")

subthrottle position sensor

(See "1JZ-GE Engine"-"EFI System"-"Throttle Body")

(See "1JZ-GTE engine" "EFI System"-"Throttle Body")

Sub -throttle valve motor

(1JZ -GE engine " -" EFI System " -" Throttle Body ")

(See "1JZ-GTE engine"-"EFI System"-"Throttle Body")

Electronic throttle computer

[1JZ-GTE (car) only]

("1JZ -GTE engine-" Electronic throttle control system

(ETCS) "" See "Throttle Control Computer")

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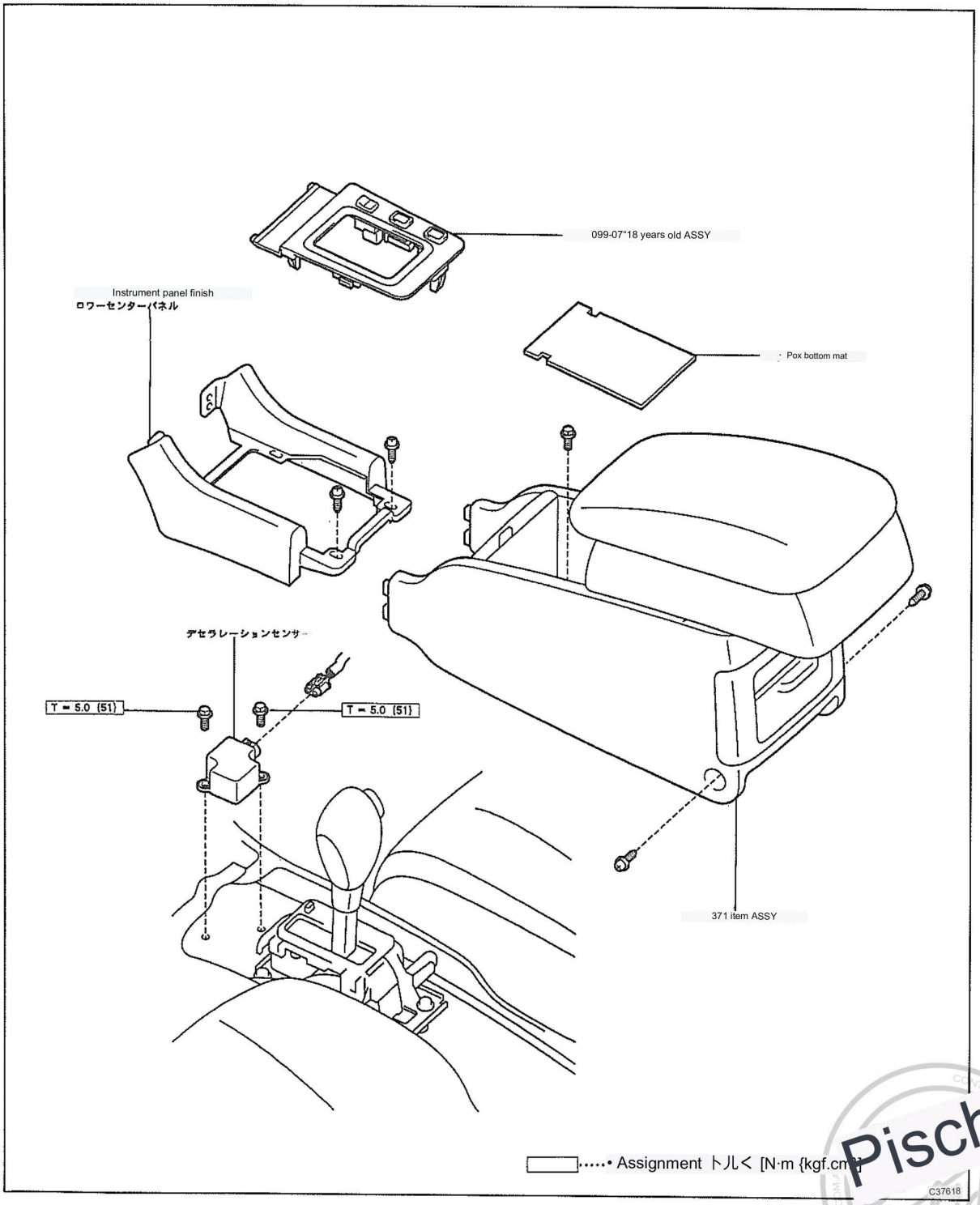
T0049034

ア厶ーケ`ㄅㄚ1 (4WD vehicle)

Detachment configuration diagram



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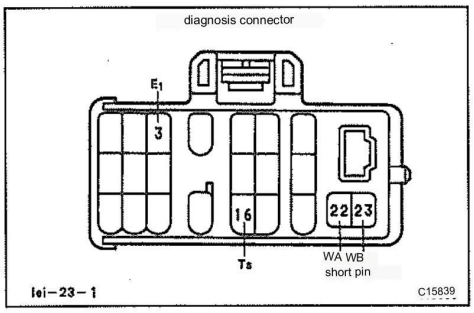

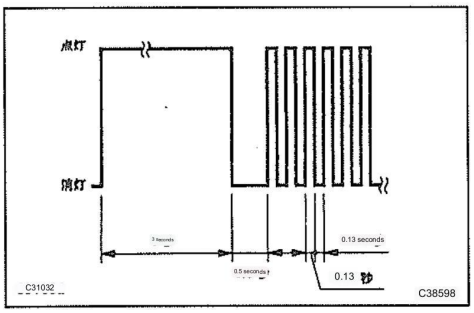

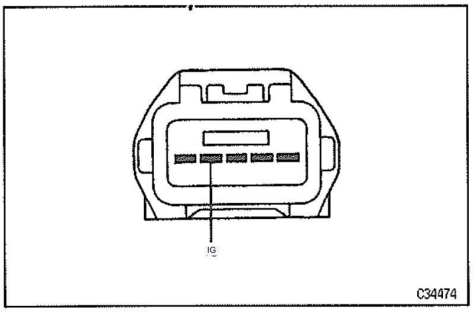

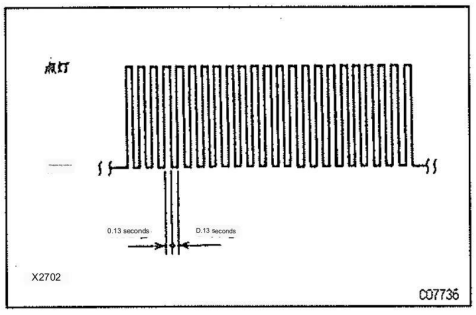

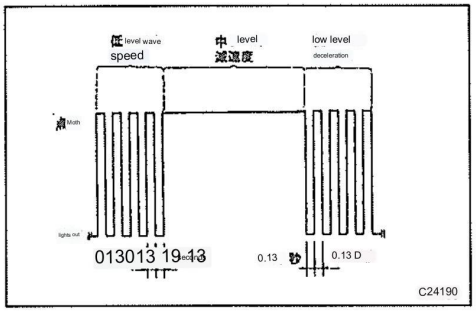

Deceleration sensor operation check and installation condition check (4WD vehicle)

1 Deceleration sensor operation check

注意 Check on a level surface.

(1) Turn off the ignition switch.

(2) Short-circuit the TsE1 terminals of the diagnosis connector.

注意 If the connector is connected in the wrong position, it may cause a malfunction. You can't go wrong with it.

(3) Turn on the ignition switch.

(4) Check that the ABS warning lamp blinks at 0.13 second intervals and is in test mode. Do not remove

注意 the short pin when the ABS warning lamp is constantly lit. and do it.

(5) If the ABS warning lamp continues to light, check the IG terminal voltage of the deceleration sensor, and if it is normal, replace the deceleration sensor with a new one.

① With the deceleration sensor connector connected, check the voltage between the IG terminal and body ground from the back side of the sensor side connector.

IG switch ON...10~14V

(6) Start the engine.

(7) When driving at a speed of approximately 20 km/h and lightly pressing the brake pedal, the ABS warning lamp should blink at 0.13 second intervals.

Check.

<Reference> Equivalent to low level speed

(8) When driving at a speed of about 20 km/h and pressing the brake pedal a little harder, check that the ABS warning lamp changes from flashing to lighting to flashing before the vehicle comes to a stop.

注意 Check road safety.

<Reference> The ABS warning lamp lights up when the vehicle is decelerated at a medium level.

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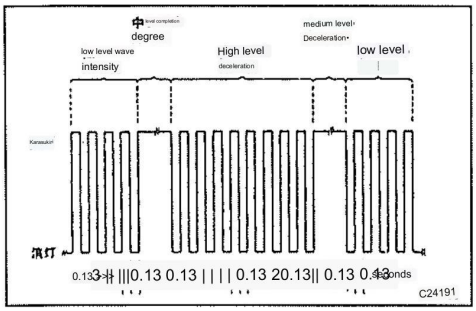
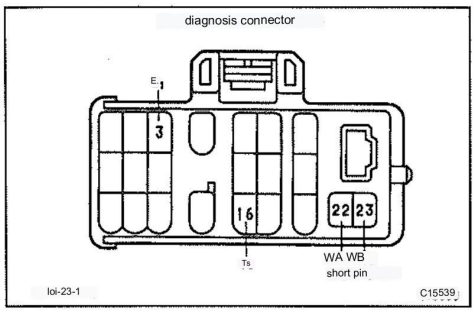


(9) When driving at a speed of about 20km/h and pressing the brake pedal hard, the ABS warning lamp will change from flashing → lighting → flashing → lighting → flashing (lighting twice) before the vehicle stops. Inspection to.

(Caution) Check road safety.

<Reference> The ABS warning lamp flashes under high-level deceleration conditions.

(10) Turn the ignition switch OFF and open the TsE terminal of the diagnosis connector.



2 Deceleration sensor installation status check

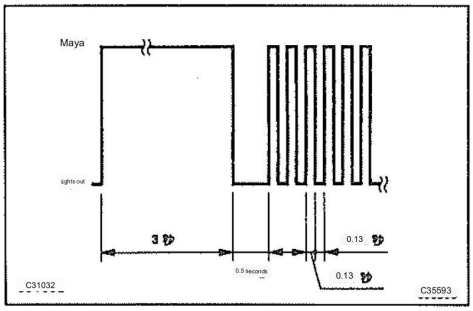
Check on a level surface.

(1) Turn off the ignition switch.

(2) Short-circuit between the Ts and E1 terminals of the diagnosis connector.

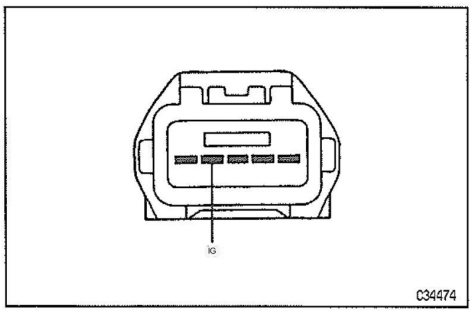
If the connector is connected in the wrong position, it may cause a malfunction. You can't go wrong with it.

(3) Turn on the ignition switch.



(4) Check that the ABS warning lamp flashes at 0.13 second intervals and is in test mode. Caution: Do not

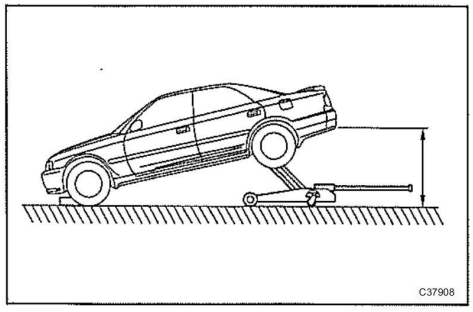
Remove the short pin when the ABS warning lamp is constantly lit. and do it.



(5) If the ABS warning lamp continues to light, check the IG terminal voltage of the deceleration sensor, and if it is normal, replace the deceleration sensor with a new one.

① With the deceleration sensor connector connected, check the voltage between the IG terminal and body ground from the back side of the sensor side connector.

IG switch ON...10~14V



(6) Slowly jack up the rear of the vehicle and set the height to the lowest part of the bumper at the center of the vehicle as the reference value.

Standard height 69±3cm (Mark II, Cresta) 72±3cm

(Chaser) Chock the front wheel.

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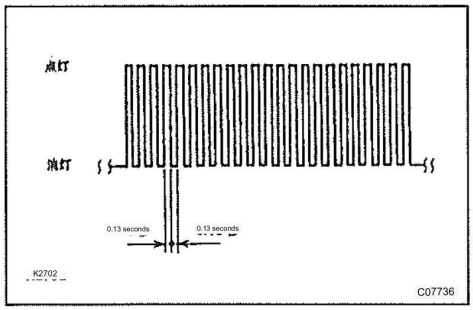
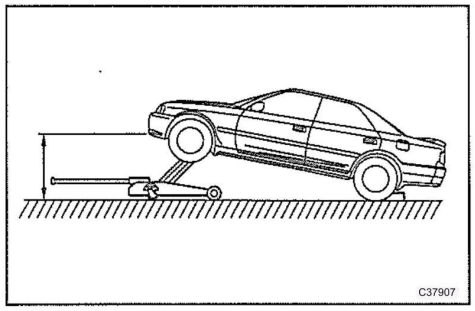


(7) Check that the ABS warning lamp is blinking. If the

〈参考〉 ABS warning lamp is on, replace the deceleration sensor mounting bracket with a new one.

(8) Slowly jack down the rear of the vehicle.



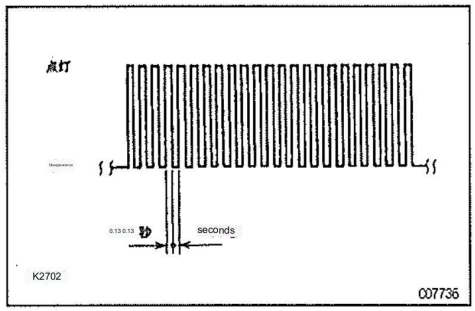
(9) Slowly jack up the front of the vehicle and lift the bumper in the center of the vehicle.

The height to the bottom of is the reference value.

Standard height 57±3cm (Mark II Chaser)

61±3cm (Cresta)

注意 Chock the rear wheel.



(10) Check that the ABS warning lamp is blinking. If the

〈参考〉 ABS warning lamp is on, replace the deceleration sensor mounting bracket with a new one.

(1) Slowly jack down the front of the vehicle.

(12) Turn the ignition switch OFF and disconnect the diagnosis connection.

Open the TsE terminals of the connector.

(13) Turn on the ignition switch. < > The test mode code is memorized until the normal mode is set [open the TE terminal and turn on the ignition switch], so be sure to do this before proceeding to the next inspection.

(14) Turn ignition switch OFF.

12

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T0049030

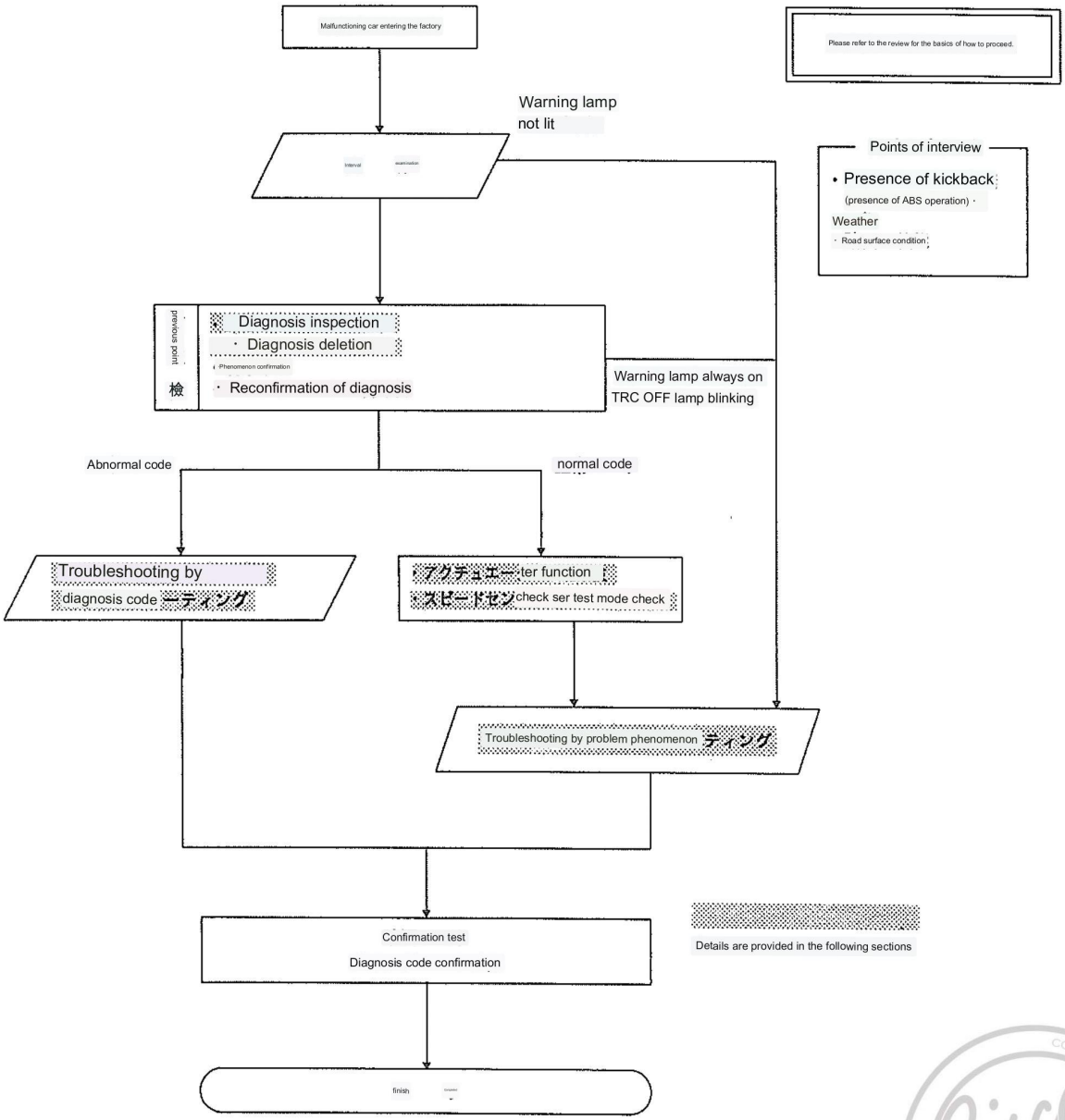
Troubleshooting How

to proceed with troubleshooting

Handling and work precautions

(1) Unless otherwise specified as an inspection method, be sure to turn off the ignition switch when removing or assembling computers, actuators, sensors, etc.

1 How to proceed with troubleshooting



JE2916
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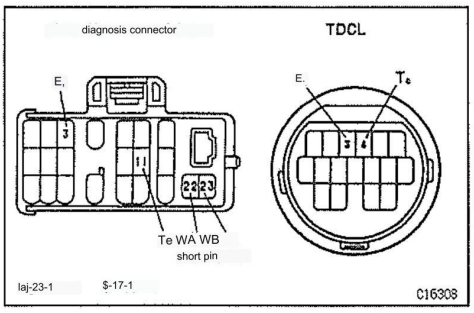
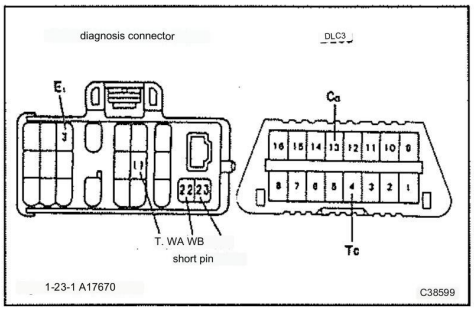
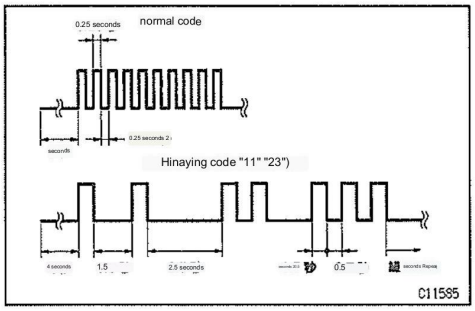






12

2 Diagnosis check

Reading by combination meter

(1) Remove short pin

- Remove the short pin of the diagnosis connector. (2) Short circuit between TcE terminals (excluding chapter 1JZ-GE, 1G-FE) - Short between TcE1 terminals of the diagnosis connector or TDCL.

get in touch.

(3) Short circuit between TcE1, Tc Co terminals (1JZ-GE, 1G-

- FE vehicles) Short between the TcE terminals of the diagnosis connector or ↔the Tc Cc terminals of DLC3.

(4) Ignition switch ON

- Read the number of flashes of the ABS warning lamp and TRC OFF lamp (TRC equipped vehicles only).

(5) TcE1, T. Co open between terminals (1JZ-GE, 1G-

- FE) Between TcE1 terminals of diagnosis connector or Tc of DLC3 ↔ C. Open the terminals.

(6) Open between ToE terminals (excluding chapter 1JZ-GE, 1G-FE) - Open between TcE1 terminals of the diagnosis connector or TDCL.

Let go.

(7) Short pin installation

- Attach the short pin of the diagnosis connector.

Reading by Toyota Diagnosis Reader

(TDCL equipped vehicles only)

(1) Enter the diagnosis engine system code using

Read the code.

〈参考〉 the Toyota diagnosis reader.

2JZ-GE... 81C 1JZ-GTE... 820

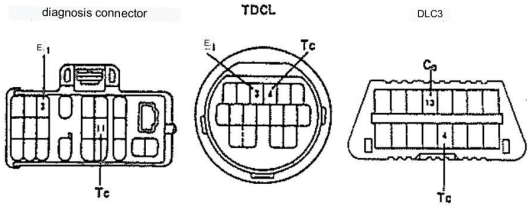
2LTE 2F0

3 Diagnosis code deletion

CAUTION Diagnosis codes are stored in nonvolatile memory, so they will not be erased if the battery, fuse, computer, etc. are disconnected.

stomach.

(1) Short-circuit between the diagnosis connector 11 (Tc) 3 (EL) terminals, between the 4 (Tc) 3 (E1) terminals of TDCL, or between the 4 (Tc) 13 (CG) terminals of DLC3, and turn on the ignition switch. Make it.



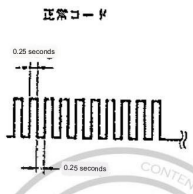
help

(2) Press the brake pedal more than 8 times in 15 seconds.

Step in.

help

(3) Check that a normal code is output.



*1 For vehicles equipped with TRC (including 4WD vehicles), the TRC diagnosis code will also be erased.

- Deletion may not be possible if the failure continues.

C37630

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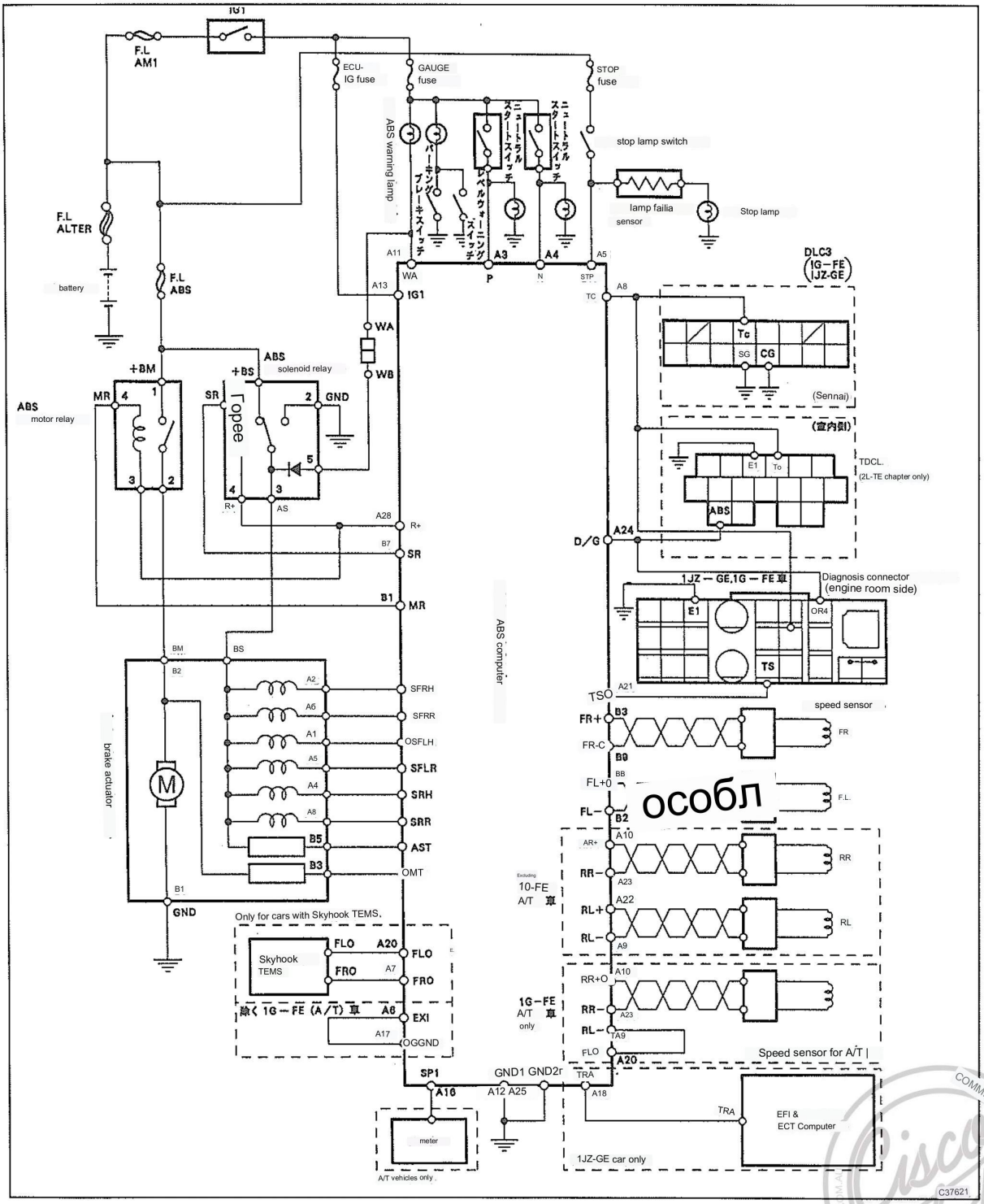
circuit diagram

Vehicles equipped with ABS only



12

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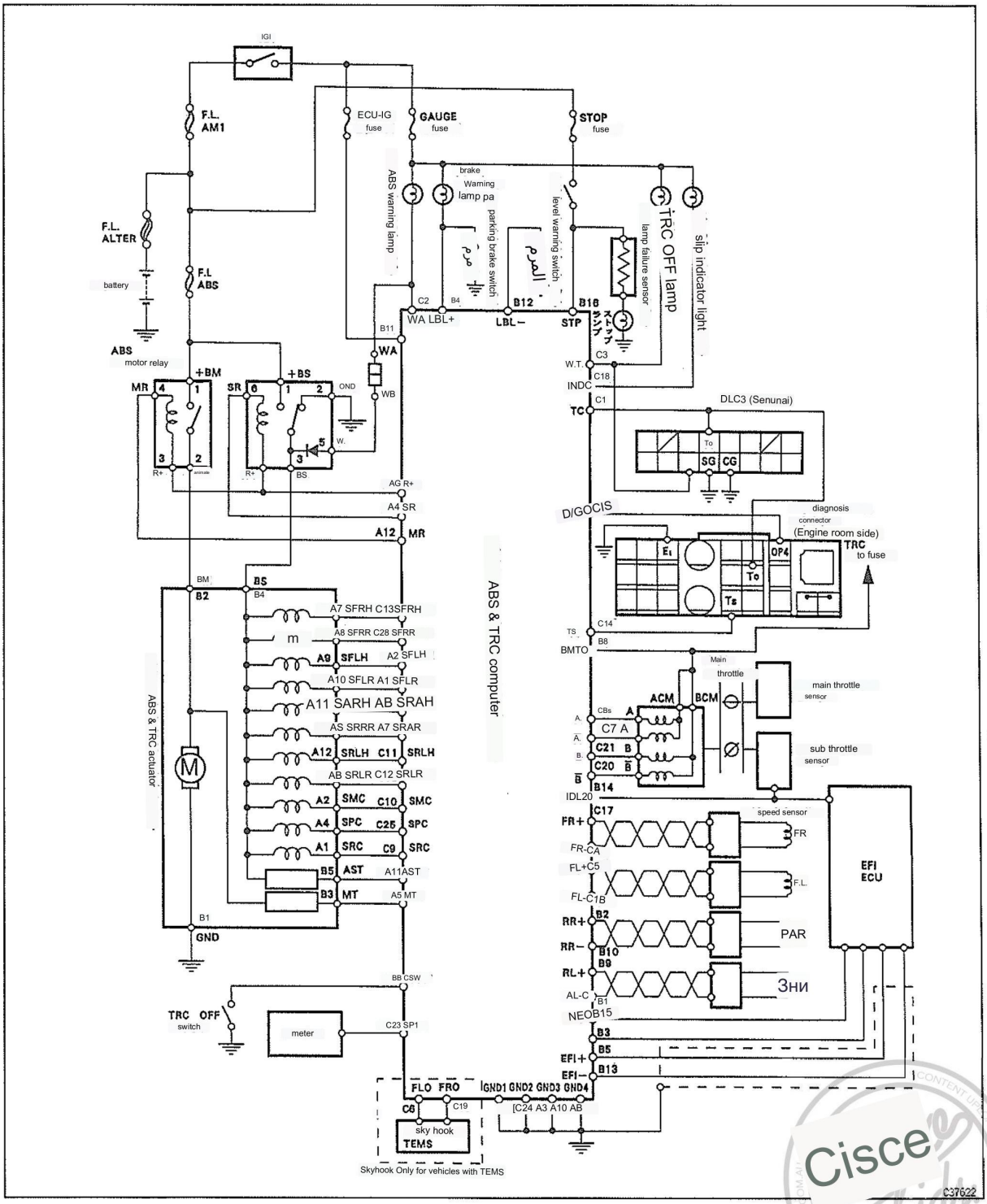
TRC equipped vehicle (1JZ-GE)



steamed noodles
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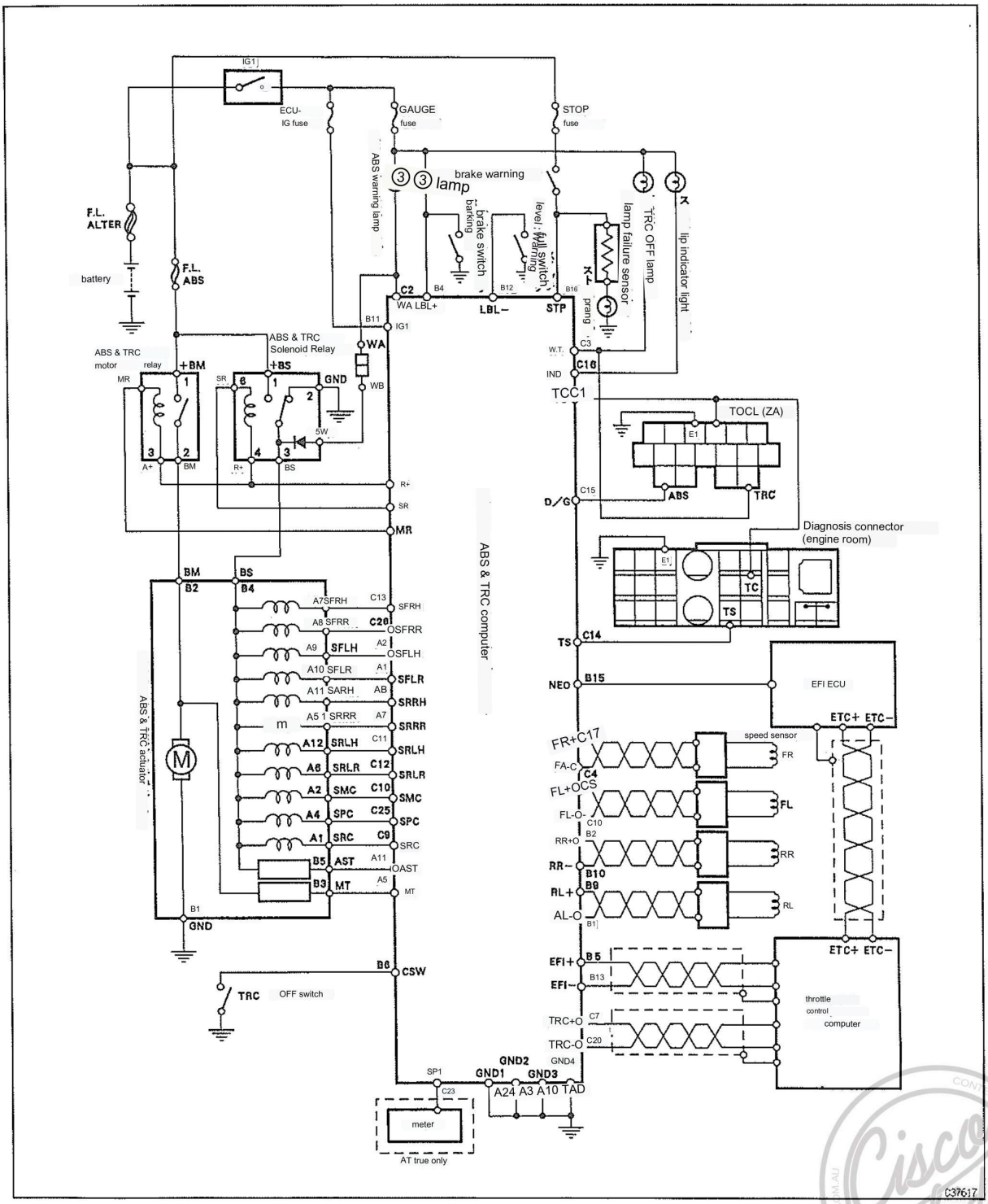
TRC equipped vehicle (1JZ-GTE vehicle)



times box

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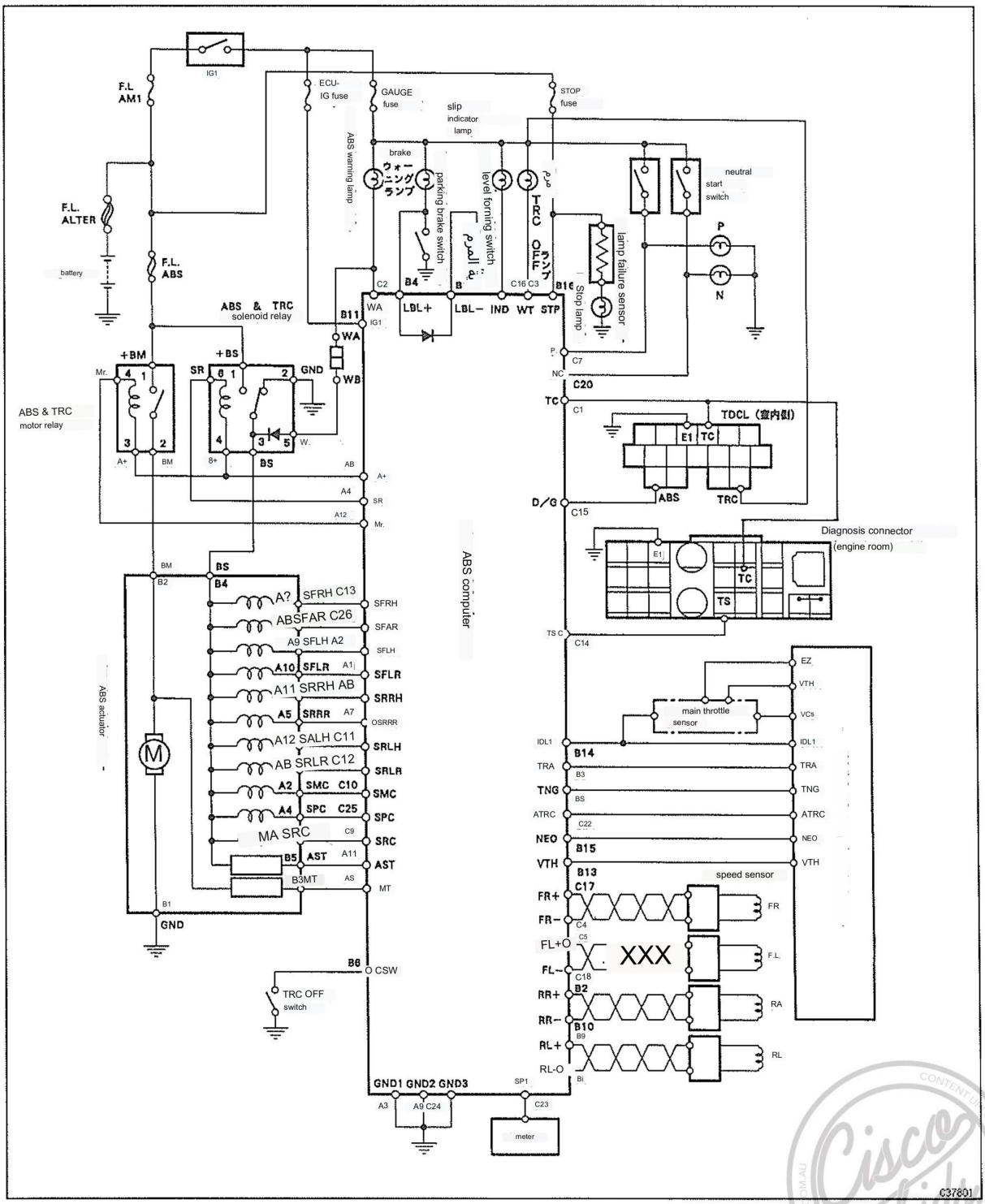
TRC equipped vehicle (2L-TE vehicle)



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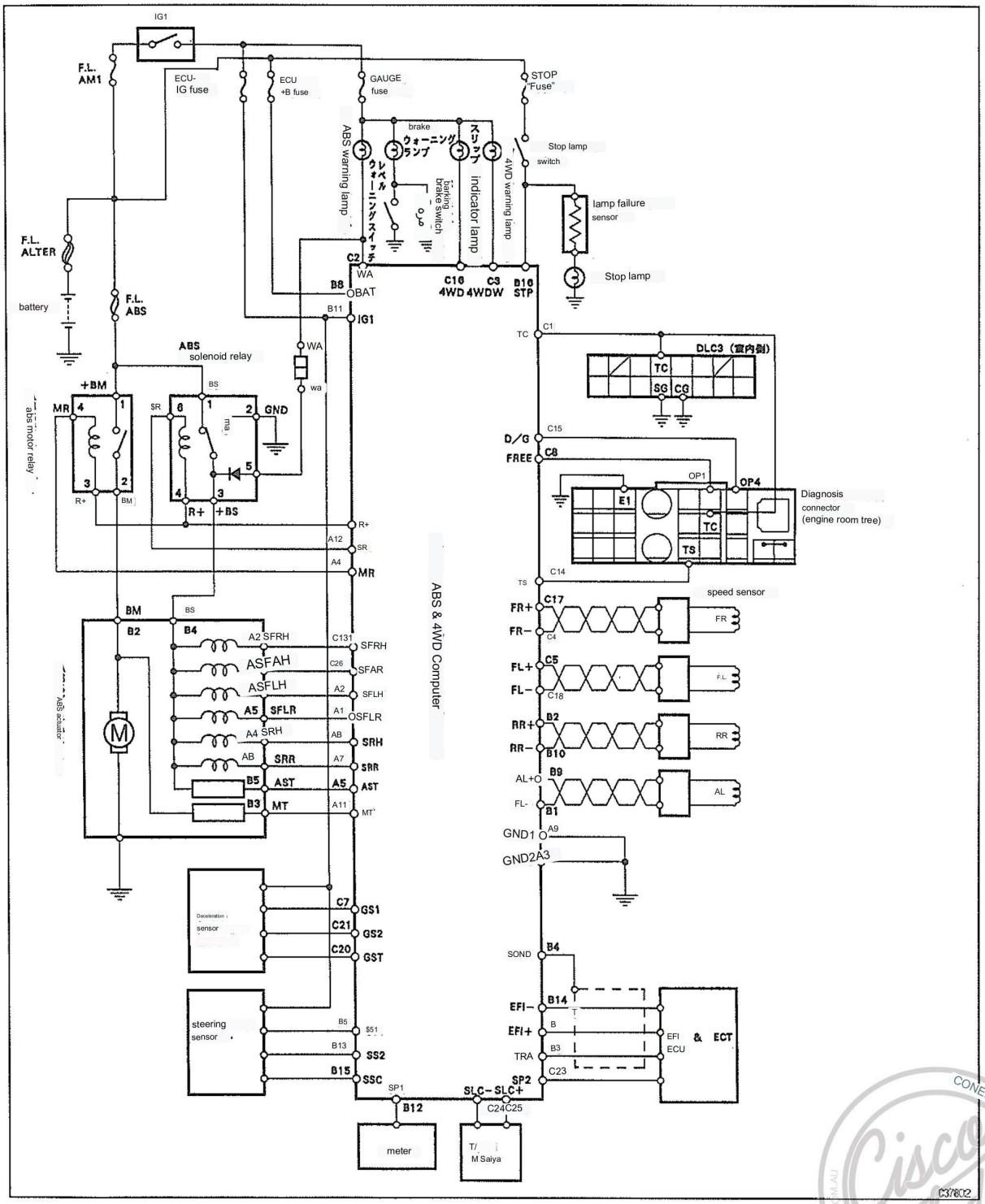
4WD車



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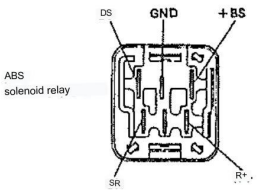
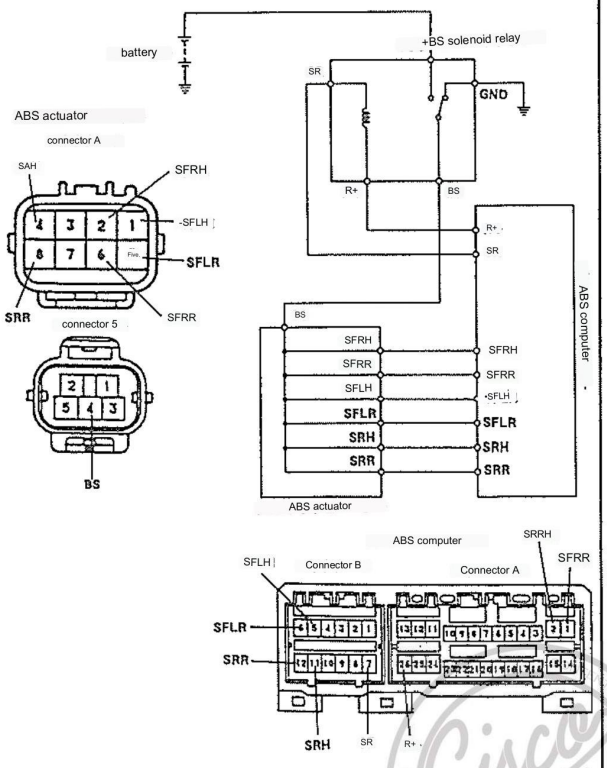
Troubleshooting by diagnosis code (ABS edition)

1 diagnosis code

<Reference> When a malfunction occurs, the warning lamp lights up and a fail-safe (normal brake) function is activated. When the problem is resolved and the warning lamp goes out, the ABS system will return to normal operation.

ABS only vehicle (ABS warning lamp display)

(Excluding 4WD vehicles)

code number	Diagnostic items Examination contents ① Diagnosis Condition ② Abnormality Status ③ Abnormal period	Inspection area
11	ABS solenoid relay system disconnection ① When the computer's SR terminal is 1.5V or less (solenoid relay ON) ② (Approximately 2 seconds after turning on the ignition switch) All computer solenoid terminals are Not 10~14V ③ 0.2 seconds or more "If the solenoid relay system is disconnected when ABS is activated, a solenoid system error code may be stored."	Inspection method: Inspect each part individually based on the relationship diagram (see page 1280) · Power supply voltage check · Wire harness check · Connector check (see review) (Reference) When diagnosis is detected, it becomes fail safe and from R+ terminal. Because there is no output (Relationship diagram) 
12	ABS solenoid relay system +B short ① When the computer's SR terminal is 10~14V (solenoid relay OFF) (only immediately after the ignition switch is turned on) is 10~14V. ② If the solenoid terminal of the computer is connected to even one place. ③ 0.2 seconds or more	

12

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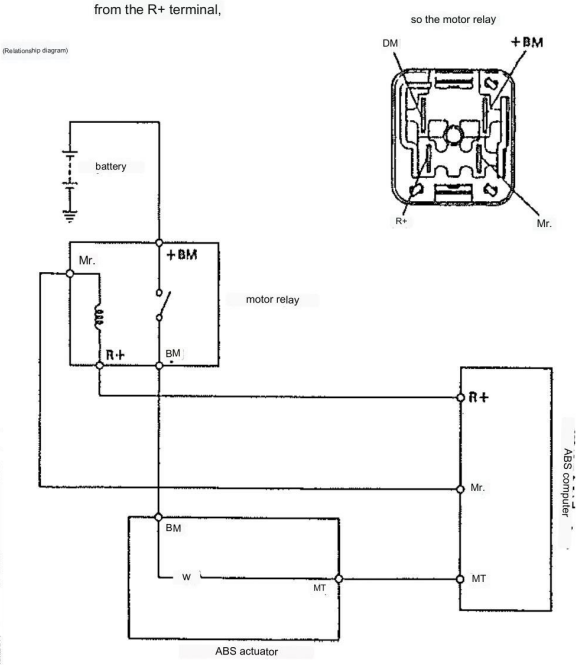
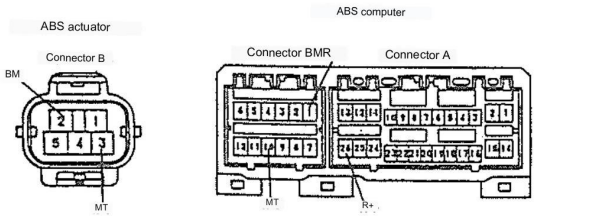
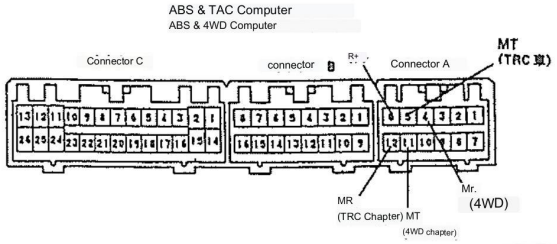
code number	Examination items Examination details ① Diagnosis conditions ② Abnormal condition abnormal period	Inspection area
13	Motor relay system disconnection ① Computer MR terminal 1.5V or less (When motor relay is ON) ② Computer's MT terminal (motor relay ON confirmation signal terminal) is not 10~14V ③ 0.2 seconds or more	Inspection method: Individual inspection of each part based on the relationship diagram (see page 1280) - Power supply voltage inspection, wire harness inspection, connector inspection (see review) (Reference) When diagnosis is detected, there is a failsafe and there is no output from the R+ terminal, so the motor relay (Relationship diagram)
14	Motor relay system +B short ① Computer MR terminal 10~14V (motor relay OFF) (when ABS is activated or other than initial check) ② Computer's MT terminal is 10 ~ 14V ③ 4 seconds or more	







12

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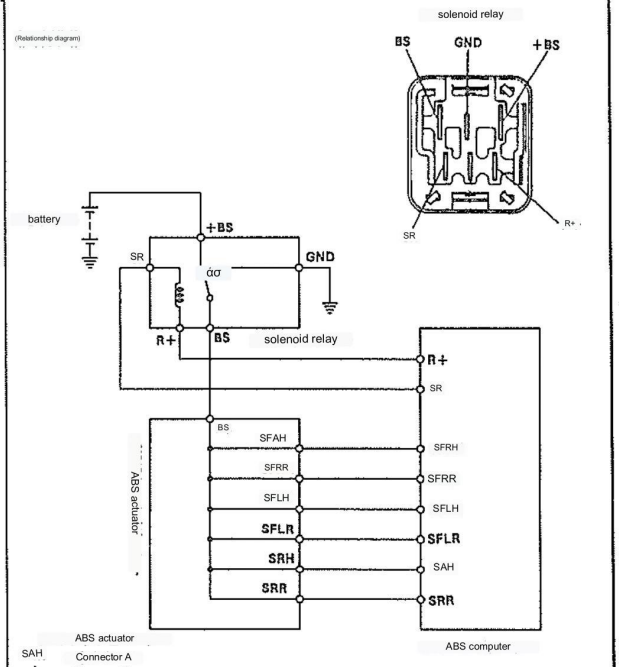
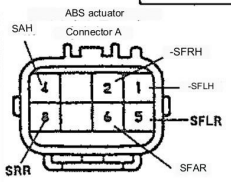
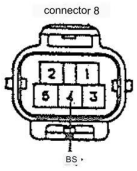
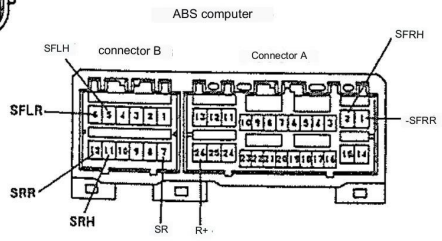
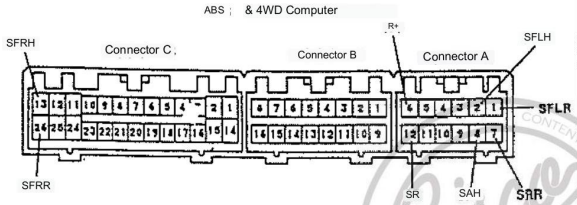
code number	Diagnosis item Diagnosis contents ① Diagnosis conditions ② Abnormal condition abnormal period	Inspection area
21	Actuator front right solenoid system (SFRR, SFRH) ① Computer SR terminal 1.5V or less (Solenoid relay ON) ② Solenoid disconnection or short circuit condition ③ 0.05 seconds or more ① When ABS is activated ② Solenoid relay system disconnection ③ 0.05 seconds or more The diagnostic content of items "22" and "23" below is the same.	Inspection method: Inspect each part individually based on the relationship diagram (see page 1279), wire harness inspection, and connector inspection (see general explanation). (Relationship diagram)     
22	Actuator front left solenoid system abnormality [SFLR, SFLH]	
23	Actuator rear solenoid system abnormality (SRR, SRH)	

JB2919

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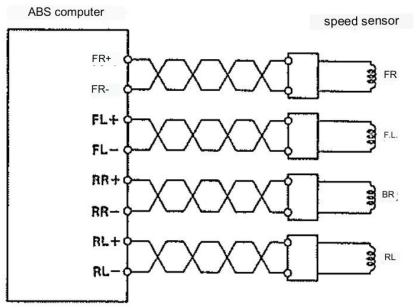
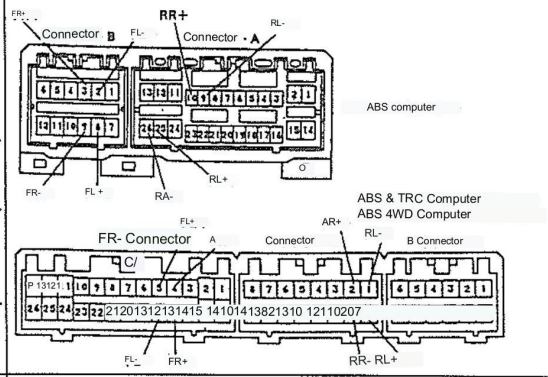
code number	Diagnostic item Diagnostic content ① Diagnosis conditions ② Abnormal condition abnormal period	Inspection area
31	Front right speed sensor system signal abnormality [FR+, FR-] ① Driving at a speed of 10 km/h or more ② The pulse signal from the speed sensor stopped ③ 15 seconds (30 seconds for 4WD vehicles) or more [However, if both RL and RR wheels are abnormal at the same time, 200 seconds or more (excluding 4WD vehicle)] ① Driving at a speed of 15 km/h or more ② Instantaneous pulse signal from the speed sensor missing ③More than 7 times ① Driving at a speed of 20 km/h or more ② There is an abnormal signal in the pulse signal from the speed sensor. occur continuously ③ 75 times or more in 5 seconds ① Ignition switch ON ② Speed sensor system disconnection ③ 0.5 seconds or more The following items ``32" to ``34" are diagnostic details.	Inspection method: Inspect each part individually based on the relationship diagram (see • page 12-81). Inspect the power supply voltage, wire harness, and connector (see general explanation). (Relationship diagram)  
32	Front left speed sensor system signal abnormality [FL+,FL-]	
33	Rear right speed sensor system signal abnormality [RR+, RR-] Rear speed sensor system signal abnormality (IG-FE (A/T))	
34	Rear left speed sensor system signal abnormality [RL+, RL-]	
41	Power supply abnormality ① Driving at a speed of 3 km/h or more ② Computer IGI terminal 9~10V or less ③ 10 seconds or more ① Relay (solenoid relay or motor relay) ② Relay contact is OFF due to computer IGI terminal voltage drop (9~10V) ⑤ 0.2 seconds or more	Inspection method: Inspect each part individually, wire harness, connector, battery, and IC regulator based on the circuit diagram.

12

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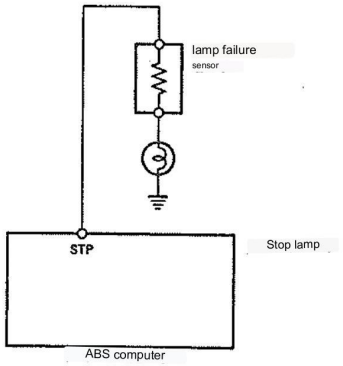
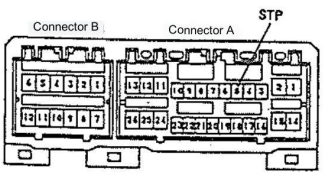
code number	Diagnostic items Examination contents ① Diagnosis conditions ② Abnormal condition ③ Abnormal period	point area
49	Stop lamp system signal disconnection 〔STP〕 ① Ignition switch ON ② Computer STP terminal 3~9.5V ③ 0.3 seconds or more	Inspection method: Inspect the stop lamp wire harness connector, wire harness, and stop lamp individually based on the relationship diagram. (Relationship diagram)  ABS computer 
51	Actuator motor not rotating ① At the time of initial check (when the vehicle speed exceeds 6km/h for the first time after turning on the ignition switch) ② Motor not rotating	Inspection method: Inspect the ABS actuator motor wire harness, connector, motor relay, battery, connector, and wire harness based on the circuit diagram.
Always lit	Computer system abnormality ② Computer system abnormality	• See "Troubleshooting by problem phenomenon"
	電源電圧異常 ② Power supply voltage 16~18V or more	• See "Troubleshooting by problem phenomenon" · IC regulator · Alternator

12

JE3487

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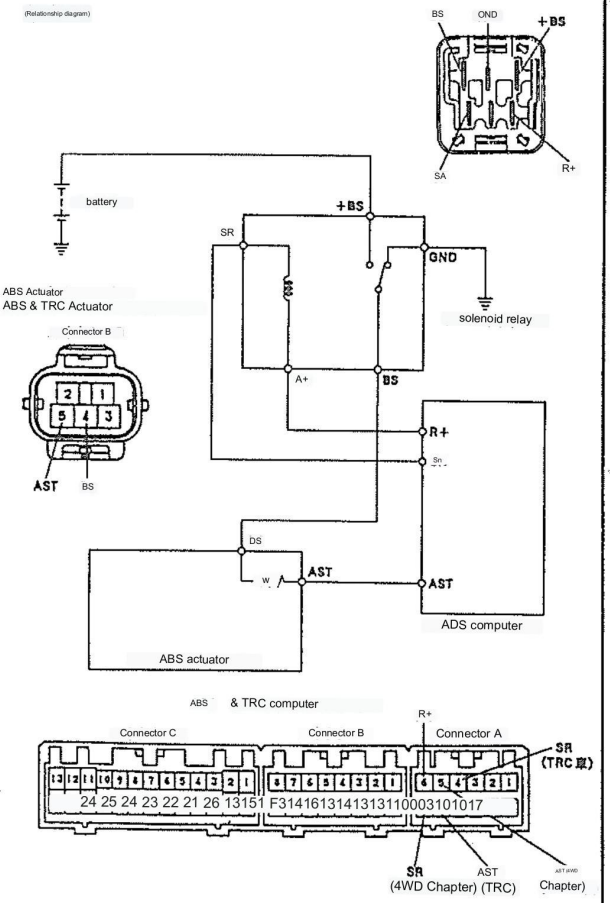
ABS & TRC car (ABS warning lamp display)

(Including 4WD vehicles)

``13", ``14", * ``21" ~ ``23", ``31" ~ ``34", ``41", ``49", ``51", ``Stand on" are the same as ABS only cars. refer *4WD vehicles only

code number	Diagnostic items / Diagnosis contents ① Diagnosis conditions ② Abnormal condition abnormal period	Inspection area
11	ABS&TRC solenoid relay system disconnection ① Computer SR terminal 1.5V or less (solenoid (driving relay ON) time (About 2 seconds after turning on the ignition switch) ② Computer AST terminal (solenoid relay ON confirmation signal terminal) is not 10~14V ③ 0.2 seconds or more	Inspection method: Inspect each part individually based on the relationship diagram (see pages 12-80) · Power supply voltage check · Wire harness check · Connector check (Refer to the review) (Reference) When diagnosis is detected, it is a fail-safe and there is no output from the R+ terminal, so the solenoid relay (Relationship diagram)
12	ABS & TRC solenoid relay system +B short 0 Computer SR terminal 10~14V (solenoid relay OFF) (only immediately after ignition switch ON) ② The computer's AST terminal is 10 ~ 14V ③ 0.2 seconds or more	



12

noodles steamed

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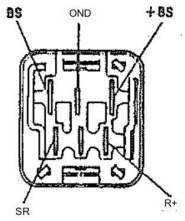
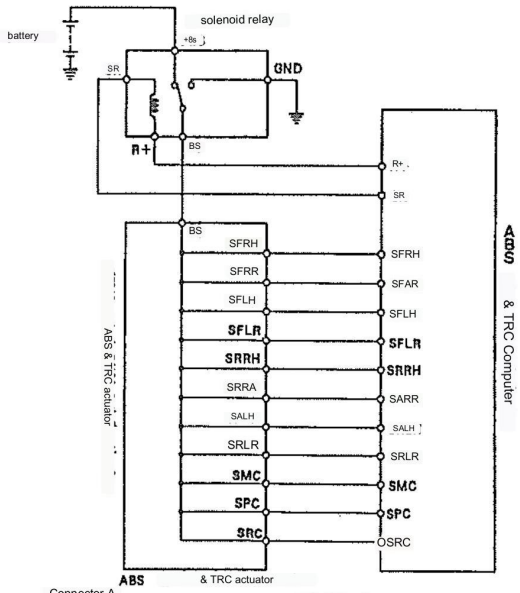
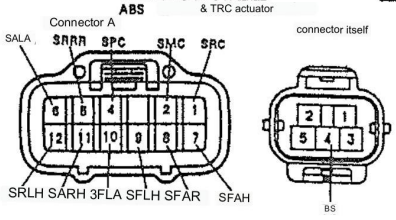
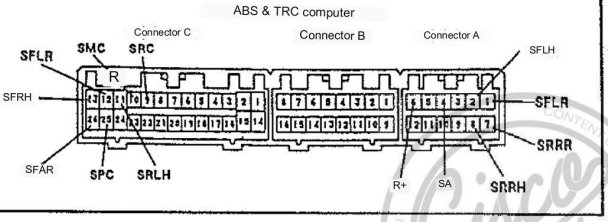
load number	Diagnostic items Diagnosis details ① Diagnosis condition 2 Abnormal condition abnormal period	Inspection area
21	Actuator front right solenoid system error (SFRR, SFRH) ① Computer SR terminal 1.5V or less (Solenoid relay ON) (2) Solenoid disconnection or short circuit for 0.05 ③ seconds or more Item diagnosis contents of "22" to "27" below are the same.	Inspection method: Inspect each part individually based on the relationship diagram (see page 12-79), Wire harness inspection, Connector inspection (see review) (Relationship diagram) solenoid valve  
22	Actuator front left solenoid system (SFLR, SFLH)	
23	Actuator rear right solenoid system error (SRRH, SRRR)	
24	Actuator rear left solenoid system error (SRLH, SRLR)	
25	Master cylinder cut solenoid system error (SMC)	
26	Master cylinder cut solenoid system abnormality (SPC)	
27	Reservoir cut solenoid system error (SRC)	





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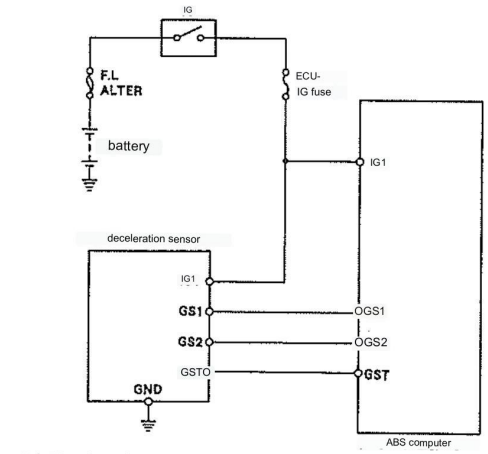
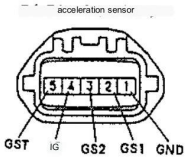
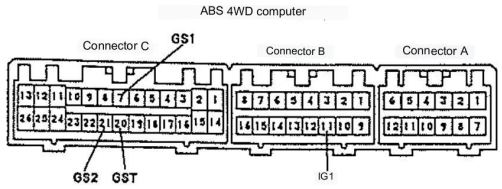
code number	Diagnostic item Diagnosis contents ① Diagnosis conditions ② Abnormal condition ③ Abnormal period	point of spot
*1 43	Deceleration sensor output error [GST, GS1, GS2] ① Vehicle speed 0km/h → 30km/h or more → 0km/h ② No change in sensor output ③ 16 times or more	Inspection method: Inspect each part individually based on the relationship diagram (see page 1256), • inspect the power supply voltage, inspect the wire harness, and inspect the connectors (see general explanation). (Relationship diagram)
*1 44	Deceleration sensor disconnection or short circuit {GST, GS1, GS2} ① Ignition switch is ON ② Deceleration sensor disconnection or short circuit ③ 1 second or more	  

*1 4WD vehicles only

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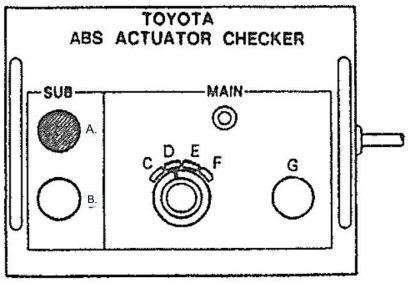
ABS actuator function check

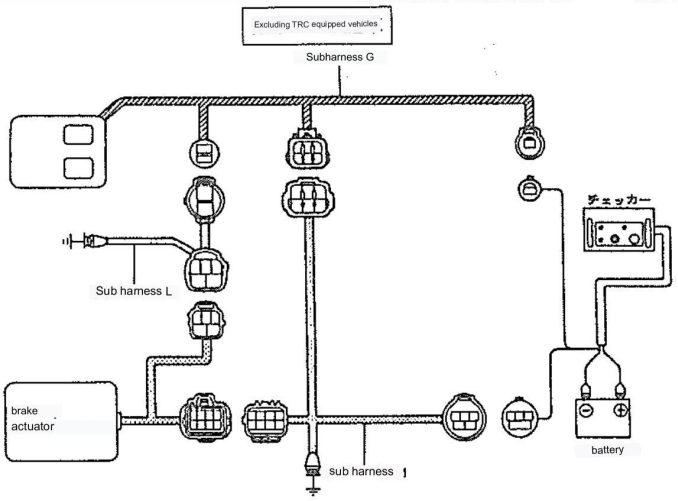
Purpose: To check for mechanical faults by forcing the ABS and TRC solenoids and motors

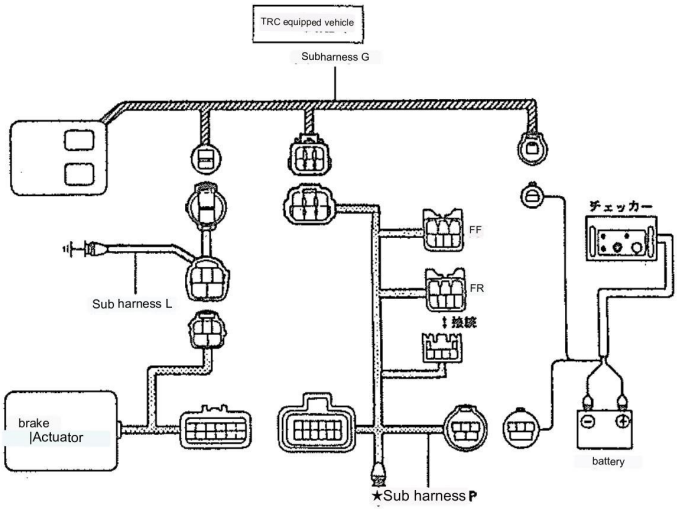
1 ABS actuator checker connection

ABS checker connection diagram



switch number		Function
bush switch	A.	Motor ON/OFF
	B.	Front left solenoid ON/OFF
select switch	C.	———
	D.	front right solenoid
	E.	———
	F	リヤソレノイ CF
bush switch	G.	solenoid ON/OFF





switch number		機　能
bush switch	A.	Motor ON/OFF
	B	Front left solenoid ON/OFF
select switch	C.	———
	D.	front right solenoid
	E.	rear left solenoid
	F	Rear right solenoid
push switch	G.	CF solenoid ON/OFF

C37572 JB3433 C31953 JB3776 C36891

Caution: Do not operate the solenoid or motor for more than 10 seconds.

C37623

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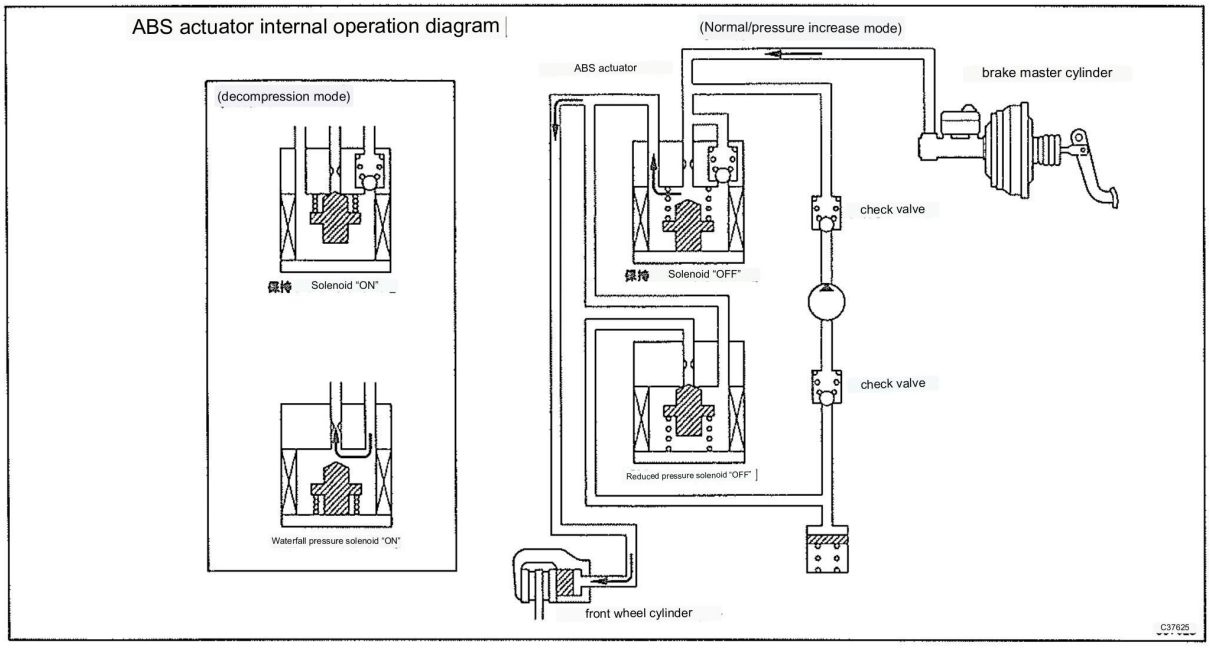
Inspection items	Inspection method	standard	When you deviate from the standard
Motor operation check (1)	Press the MOTOR switch for 2~3 seconds	I can hear the operating sound	Pump motor malfunction
Solenoid valve operation inspection	Align the select switch with the inspection wheel and perform steps (1) to (6) for each wheel.		
	(1) Depress the brake pedal with a constant force and hold it for 15 seconds.		No Decompression solenoid valve sealing failure
	(2) Press the MOTOR switch	No pulsation in the pedal	Poor pressure reduction solenoid valve sealing
	(3) Return the pedal and press it again.	———	———
	(4) Press the ON/OFF switch (decompression mode) ※	The pedal doesn't fit in	Holding solenoid valve malfunction
	(5) Release the ON/OFF switch (pressure increase mode) ※	the pedal goes in	Castle pressure solenoid valve malfunction
	(6) Press the MOTOR switch	pedal is returned	Pump motor malfunction

*When inspecting the wheels of the "B" switch (FRONT LH), the select switch can be placed in any position)

JB2923

ABS actuator internal operation diagram



4 Delete the diagnosis code Be sure

CAUTION When performing a function check, the diagnosis code will be memorized, so to delete it after completing the inspection.

(See "Troubleshooting" - "Erase Diagnosis Code")

5 Confirm normal code

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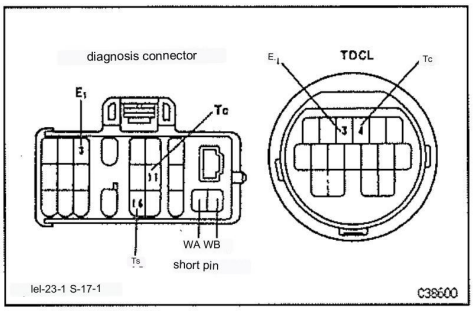

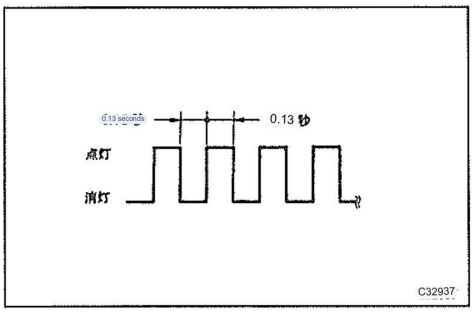

Sensor test mode inspection

Purpose: To conduct a more detailed inspection of speed sensor systems that cannot be detected by normal diagnosis.

1 Speed sensor check

item	
test mode set	Remove the short pin and short-circuit between the 16 (Ts)3 (E1) terminals.
⇩ engine start	Check that the ABS warning lamp is in test mode (blinks every 0.13 seconds)
⇩ Driving test *1	Inspection items / Sensor output voltage check / Sensor output / Sensor output (high speed) Electric inspection [km/h] / 0 ~10 / 45 ~ 80 / 80~ Warning lamp status / *Point deduction / Flashing (constant) Off (normal) / Blinking (abnormal) Blinking for 1 second → Off (normal) ※ A 4WD vehicle drives at 20 km/h and applies the brakes a little harder.
⇩ Test mode code display	Short circuit between 11 (Tc)3 (E1) terminals (Do not open short circuit between 16 (Ts)3 (E) terminals) Reference: Display the normal diagnosis code as well.
⇩ Cancel test mode	Open between 11 (Tc) 3 (E1) terminals and 16 (Ts) 3 (E) terminals

※ Since it is not possible to determine whether the warning lamp is normal or abnormal, please perform a driving test.

After finishing, be sure to check the code on the test mode code display.

*1 Driving precautions

· When starting and stopping the vehicle, keep the steering wheel in the straight-ahead position and slowly decelerate. (Do not let the tires slip) - Maintain a vehicle speed of 45 km/h or more (80 km/h or less) for more than 1 second.

12

JB2925

(Reference) - When set to test mode, all suspension control systems are set to test mode. It becomes de.

· When entering test mode, all codes are memorized once, and they are stored once during inspection. · Test mode codes of other systems that are not inspected may not be erased, but the memory will be erased if test mode is canceled. If the computer determines that it is normal, it will erase the memory.

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2 Test mode inspection

code number	Diagnosis details [terminal symbol]	Test mode code judgment conditions	Inspection items
71	Front right speed sensor output voltage abnormality (FR+, FR-)	up to 10~10km/h straighten slowly Run forward.	① Speed sensor disconnection, short circuit ② Speed sensor wire Ness disconnection, short ③ Improper speed sensor installation ④ Speed sensor rotor system abnormality
72	Front left speed sensor output voltage abnormality [FL+,FL-]		
73	Rear right speed sensor output voltage abnormality [RR+, RR-]		
74	Rear left speed sensor output voltage abnormality [RL+, RL-]		
75	Front right speed sensor output cycle error [FR+, FR−]	Run for more than 1 second at 45km/h or more do.	① Damaged speed sensor rotor ② Foreign matter attached to the tip of the speed sensor
76	Front left speed sensor output cycle error [FL+, FL-]		
77	Rear right speed sensor output cycle error (RR+, RR-)		
78	Rear left speed sensor output cycle abnormality [RL+, RL-]		
79*	Deceleration sensor medium G detection error [GS1, GS2]	Drive at about 20 km/h and apply the brakes a little harder.	① Deceleration sensor disconnection, short ② Deceleration sensor system wire harness disconnection or short ④ Deceleration sensor stick ④ Deceleration sensor is incorrectly installed

*4WD vehicle

JE2926

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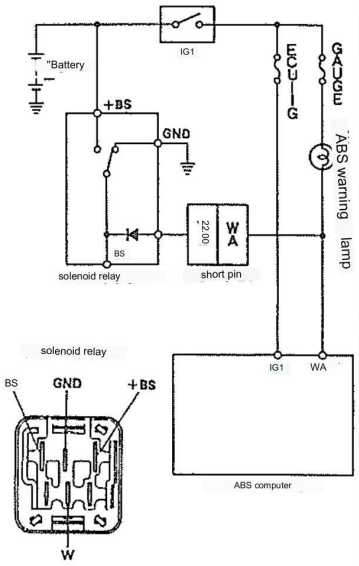
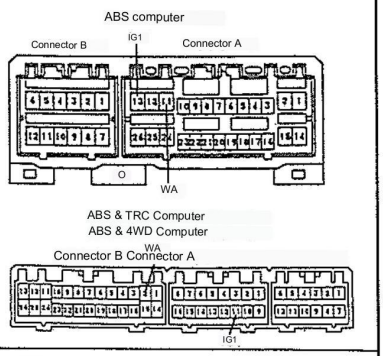
Troubleshooting by problem phenomenon

1 Troubleshooting by problem phenomenon (ABS warning lamp)

Malfunction phenomenon		Related circuit diagram
Diagnosis details ①Diagnosis conditions ②Abnormal condition	Inspection area	
ABS warning lamp is constantly lit but no error code is output		
① When the diagnosis code is completely read ② ⑧ Displays the normal code	• Defective solenoid relay · Wire harness (diagnosis) Connector WB ~ Solenoid Relay W) body short · Voltage drop	
② ⓑ Warning lamp goes off	· Poor computer connector connection · Wire harness (fuse (ECU-IG) ~ computer IG] Disconnection/short circuit	
② © Warning lamp always on	Proceed to the following inspection	
1 After turning the ignition switch OFF, disconnect the computer connector and turn the ignition switch ON. ② Warning lamp lights up	· Wire harness (meter~) computer meter~diagnosis connector WA) body short	
② Warning lamp lights up	· Computer failure *1	
ABS warning lamp does not light up for about 3 seconds after turning on the ignition switch		
1 Connect the short pin of the diagnosis connector. Remove, short-circuit the WAE terminals, and turn on the ignition. tion switch ON ② ABS warning does not light up ① Check	· Defective combination meter · Wire harness [fuse (GAUGE) ~ meter] Defective	
continuity between the WGND terminals of the solenoid relay. Internal failure of the solenoid relay. Change the polarity of the tester rod and check ② Both sides are present No continuity		
① When the ignition switch is OFF, disconnect the short pin of the diagnosis connector and the computer connector, and connect the WA terminal of the vehicle wire harness side connector to the body. Turn on the ignition switch as ② @ ABS warning lamp does not light up	· Wire harness (meter ~ computer) defective	
② ABS warning lamp lights up	· Computer failure	
When ABS operates abnormally (ABS operates just before one side stops, etc.)		
· There may be a problem with the speed sensor system, deceleration sensor, or sensor rotor system.		
When ABS is difficult to operate		
· The stop lamp switch itself may be defective, the wiring harness (stop lamp switch ~computer), or the connector connection may be defective.		
ABS Warning Ranboo momentary light → When normal code is displayed		
• There may be a problem with the IG regulator or alternator *1		





Excluding cases where a 1G-FE (A/T) car computer is mistakenly installed in a 1G-FE (A/T) car

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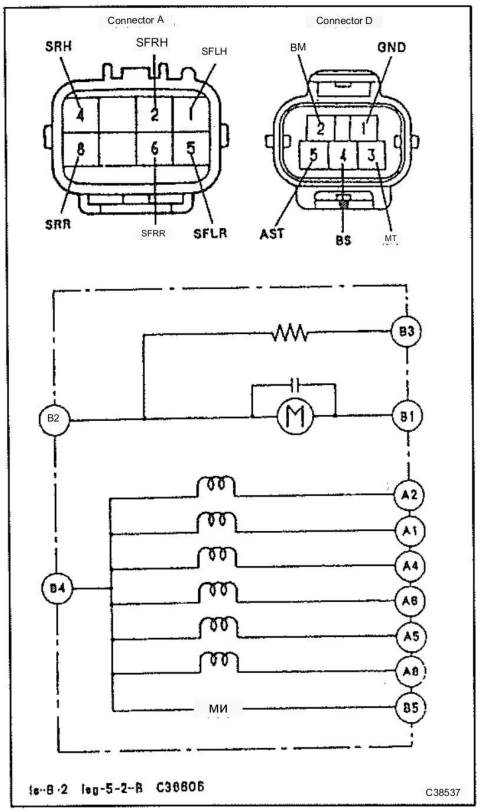

Individual inspection (ABS edition)

brake actuator

1 Continuity and resistance check

(1) Check continuity and resistance between each terminal.

Vehicles equipped with ABS only (including 4WD vehicles)

standard ○○ guidance available

Connector A						Connector B					Resistance value
1	2	4	5	6	8	1	2	3	4	5	
○									○		8.8±0.5Ω (25℃時)
	○								○		
		○							○		
			○						○		4.3±0.30 (at 25°C)
				○					○		
					○				○		
							○	○			3.3±0.30 (at 25°C)
									○	○	
						○	○				—

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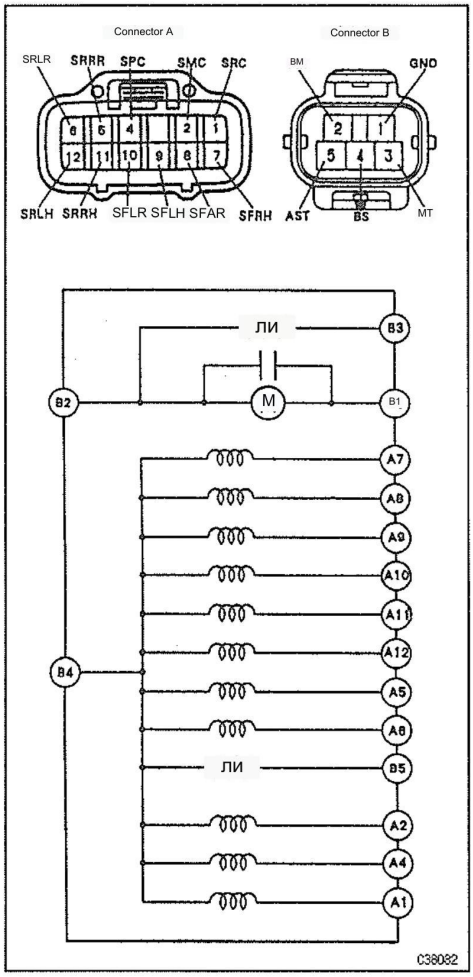

ABS & TRC equipped vehicles (excluding 4WD vehicles)

基 準

○○Continuity available

Connector A											Connector B					抵抗値
1	2	4	5	6	7	8	9	10	11	12	1	2	3	4	5	
○														○		3.6±0.50 (at 25℃)
	○													○		8.8±0.50 (at 25℃)
		○												○		4.0±0.3Ω (25℃時)
			○											○		4.3±0.30 (at 25℃)
				○										○		
					○									○		
						○								○		
							○							○		3.8±0.50 (at 25℃)
								○						○		
									○					○		
										○				○		
												○	○			33±0.3Ω (25℃時)
											○	○				—

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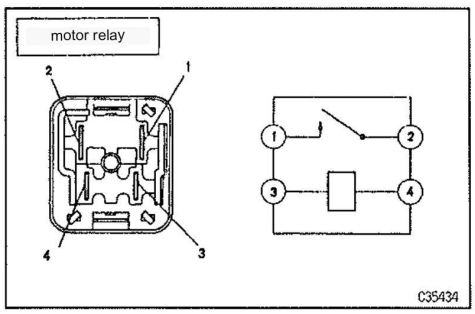

ABS relay

1 Motor relay inspection

(1) Check continuity between each terminal.

standard ○○With guide ○○Without guide

1 (+BM)	2 (BM)	3 (R+)	4 (MR)	Measuring conditions
○	○			Resistance □62±6 (at 25℃)
		○	○	
○	○			Apply battery voltage to terminals 3-4

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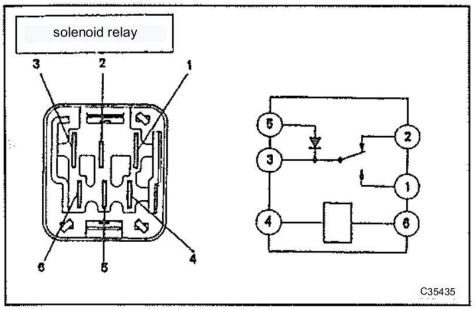

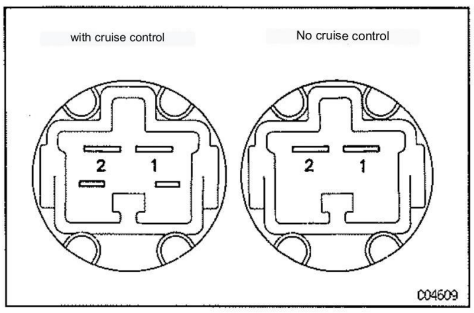

2 Solenoid relay inspection

(1) Check continuity between each terminal.

基準	With OKO diode Yes No					
1 (+BS)	2 (GND)	3 (BS)	4 (R+)	5 (W)	6 (SR)	Measurement condition
○	×	○				Resistance value 80±8Ω (at 25°C)
○	○					
○	○		◁	○		
○			○		○	
○		○				Apply battery voltage across terminals 4-6
	×	○				

JB3707

stop lamp switch

1 Continuity check

(1) Check continuity between 12 terminals.

standard When the shaft is pushed in... No continuity

When the shaft is not pushed in... There is continuity

front speed sensor

1 Front speed sensor inspection (1)

Measure the resistance between the connector terminals.

Standards 1.6~1.8kΩ (2WD vehicle) (at 20°C)

1.4~1.8kΩ (4WD vehicle) (at 20°C)

(2) Check that there is no lifting on the sensor mounting surface.

(3) Check the tightness of the sensor mounting bolt.

T=8.0N•m {82kgf•cm}

(4) Check that there is no foreign object larger than 1 mm square attached to the sensor tip.

do.

2 Speed sensor rotor inspection

(1) Check that there are no scratches on the speed sensor rotor.

rear speed sensor

1 Rear speed sensor inspection

(1) Measure the resistance between connectors.

Standard price 20.9~1.3kΩ (at 25°C)

(2) Check that there are no scratches on the tip of the sensor, and that there are no foreign objects larger than 1 mm square attached.

(3) Check that there is no floating on the sensor mounting surface. (4) Check the tightness of the sensor mounting bolt.

Standard value T=8.0N·m {82kgf·cm}

2 Speed sensor rotor inspection

(1) Check that the speed sensor rotor is free from scratches and foreign matter.

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ABS warning lamp

1 ABS warning lamp check

(1) Turn on the ignition switch. Standard:

The ABS warning lamp lights up for about 3 seconds and then turns off.

ABS computer

1 Computer inspection

(1) With the computer connector connected, check the voltage and continuity between each terminal.

Before measurement, check the power supply voltage (10 to 14V when IG is ON) and grounding (5 or less between each earth terminal and the body when IG OFF).

do.

(2) Using an oscilloscope, a pulse is generated between each terminal.

Confirm that

<Reference> The * mark in the reference value column shows the oscilloscope waveform. - The oscilloscope waveform shown is a reference example, and noise, chattering, etc. are omitted.

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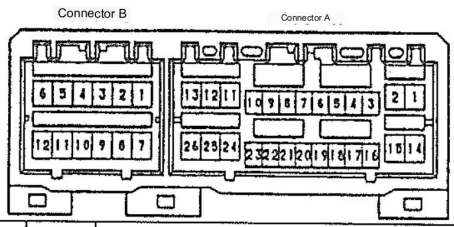
ABS only equipped with ABS



Connector	One-end number	Princess of the terminal (terminal name)	input/output	item	Measuring conditions	standard
A.	1	SFRR GND (Front RH Solenoid output 減圧)	output	Electronics	IG Switch on about 1.5 seconds	10 ～ 14V ＊1
	2	SFRH → GND (Front RH Solenoid output)	output	Voltage	IG switch ON, after about 1.5 seconds	10 ～ 14V ＊1
	＊2 3	P+ GND (P -range switch input)	input	Voltage	IG Switch ON, Shift Lever P Range	8 ～ 14V
					IG Switch ON. Other than shift lever P range	1.5V or less
	＊2 4	N → GND (N -range switch input)	input	Electronics	IG Switch ON, Shift Lever N range	8 ～ 14V
					IG Switch ON, Shift Lever N range	1.5V or less
	5 (3737)	STP → GND Switch input	input	Electronics	IG switch ON, brake pedal	8 ～ 14V
					IG switch ON, when the brake pedal is opened	2V or less
	＊3 6	EXI → GND (3.4 sensor number)	input	導 through	IG switch off	導通 can be
	＊6	FRO → GND 7 Front RHY Hakiru wheel speed output)	output	Oscilloscope	Run at about 30km/h	waveform 2 *
	8	TO GND Diagnostic) Eight Codes -Sith)	input	Electronics	IG Switch ON, Diagnothes Conector TCE, terminal Hearing short circuit	2V or less
					IG Switch ON. Diagnothesconector TCE, terminal Opening	10 ～ 14V
	-	RL-GND (Rear LH Speed 9 センサー入力 (−))	input	Dagal path	IG switch off	導通 can be
	10	RR＋ ↔ GND Rear RH Speed \ Sensor input (+)/	input	Oscilloscope	Run at about 30km/h	waveform 1 *
	11	WA ++ GND /ABS Walking (Rendeurning)	output	Electronics	IG switch OFF → ON	2V for about 3 seconds or less 10-14V *1

*1 No inspection is required when the ABS Warnin Grand Lamp is lit (failure). (A11 terminal is 2V or less due to warning output, A24 terminal is due to failure detection.
1V or less, other terminals are OV because the brake actuator is prohibited by the ABS computer's fail -safe function.
becomes.)

*2 A/T car only

*3 Ig-FE (A/T) chapter excluding

*6 Car with Sky Hook TEMS only

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connector	ID	Terminal symbol (terminal name)	input/output	Item	Measuring conditions	standard
A.	12	GND1 + Body Earth (GND)	input	lead通	IG switch OFF	導通 can be
	13	IG1 GND (IG)	input	Densho	IG switch ON	10 ～ 14V
	*2 16	SP1 GND (meter 用) Yasho signal output/	output	Oscilloscope	Runs at approximately 30km/h	waveform 2 ※
	*3 17	GGND- Body Earth (GND)	input	Continuity	IG switch OFF	With guidance
	Engine ECU tooth	TRA++ GND 18 (root output)	output	Voltage	At idle rotation	Approximately 2.5V *4
	*8 20 Front LHY	FLO→ GND (車速出力)	Output oscilloscope Runs at approximately 30km/h			waveform 2 *
	21	TS → GND /Diagnosis (Chair Chusis) Code	input	Telephone	IG switch ON, diagnosis connector TsE, between terminals short path	2V or less
					IG switch ON, diagnosis connector TsE, between terminals open	10 ～ 14V
	*3 22	RL+ GND (リヤ LH スピード) sensor input(+)/	input	Oscilloscope	Runs at approximately 30km/h	waveform 1
	*7 22	RL++ GND (Rear LH Speed センサー入力 (+))	input	Continuity	IG switch OFF	No thin
	23	RR-+ GND (Rear RH Speed センサー入力 (−))	input	導通	IG switch OFF	With guidance
	24	D/G+ GND (diagnosis output terminal)	output	HZ	Short circuit between IG switch ON, diagnosis connector Tc E, terminal	diagnosis code output
				電圧	IG switch ON, diagnosis connector TcE, terminal open space	10 ～ 14V *1
	25	GND2- Body Earth (GND)	input	Continuity	IG switch OFF	With guidance
	26	R+ ↔ GND (Relay drive power supply)	output	Densho	IG switch ON	10 ～ 14V
B.	1	MR GND (ABS motor relay output)	output	Densho	After about 1.5 seconds after turning on the IG switch	10 ～ 14V
	2Front LH Speed	FL-GND (センサー入力 (−))	input		IG switch OFF	There is a guide

*1 Inspection is not required when the ABS warning lamp is lit (in case of failure). (The A11 terminal is 2V or less for warning output, the A24 terminal is 1V め or less for failure detection, and the other terminals are for the ABS computer's failsafe function, which prohibits the operation of the brake actuator. It becomes OV.)

*2 A/T vehicles only

*3 Excluding IG-FE (A/T) 車

*4 Under normal conditions, it repeats 1V or less and 10 to 14V at a cycle of 4 to 8 mS.

*Five 1G-FE(A/T) Chapter

*6 Only for cars with Skyhook TEMS

*7 1G-FE(A/T) cars only

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connector	ID	Terminal fertilizer (terminal name)	input/output	item	Measuring conditions	standard
B	3	FR+ GND (Front speed Sensor input (+))	input	Oscilloscope	Runs at approximately 30km/h	波形 1 ※
	4	AST GND (ABS Solenoid test terminal)	input	電圧	IG switch ON, after about 1.5 seconds	10～14V *1
	5	SFLH GND (Front LH maintenance 持 solenoid output)	output	Voltage	IG switch ON, after about 1.5 seconds	10～14V *1
	6	SFLR GND / Front LH Pressure (Talent)	output	Densho	IG switch ON, after about 1.5 seconds	10～14V *1
	7	SR- GND ABS solenoid relay output ID)	output	Densho	After about 1.5 seconds after turning on the IG switch	2V or less 1
	8	FL+ GND Front LH (speed sensor)	入力	Oscilloscope	running at approximately 30km/h	waveform 1 ※
	9	FR— ↔ GND front RH speed (sensor speed) MT	input	Continuity	IG switch OFF	導通 can be
	10	+ GND (ABS motor test terminal)	入力	Voltage	IG switch ON, after about 1.5 seconds	1.5V or less ＊1
	series	SRH GND 11 holding solenoid valve no.	output	Voltage	IG switch ON, after about 1.5 seconds	10～14V ＊1
	systems pressure	SRR → GND 12 reduction solenoid valve	output	Telephone	IG switch ON, after about 1.5 seconds	10～14V ＊1

*1 No inspection is required when the ABS warning lamp is lit (when there is a malfunction). (The A11 terminal is 2V or less for warning output, the A24 terminal is 1V or less for failure detection, and the other terminals are OV because the brake actuator operation is prohibited by the fail-safe function of the ABS computer. becomes.)

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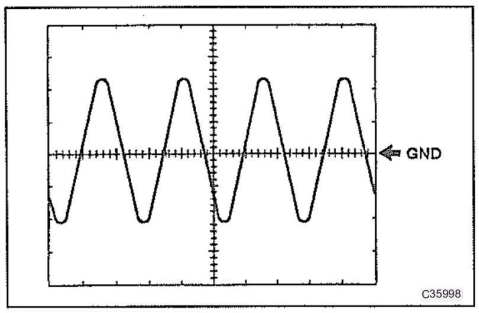
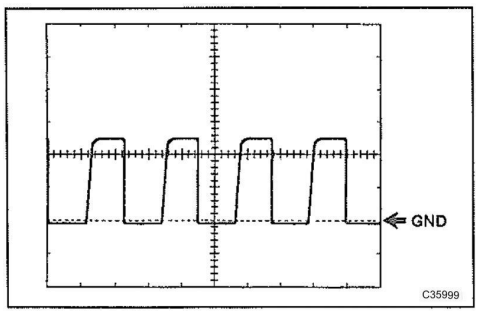


waveform 1

Instrument set 1V/DIV, 2ms/DIV

Measurement condition Traveling at a speed of approximately 30km/h

注意
- As the car (wheel rotation speed) increases, the cycle becomes shorter and the amplitude of the output voltage becomes larger.
- If there are scratches or foreign objects on the rotor tip or sensor tip, noise is added to the waveform.
- When foreign matter is attached, if there is no abnormality (scratches, dents) on the sensor tip after removing the foreign matter, reuse it.



waveform 2

Instrument set 5V/DIV, 2ms/DIV SP1 is 20ms/DIV

Measuring conditions The cycle becomes shorter as the vehicle

注意 車速 speed increases (wheel rotation speed) at approximately 20 km/h.

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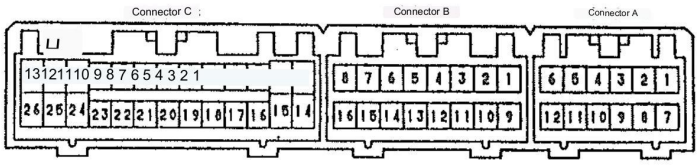
ABS & TRC cars



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connector	ID	Terminal symbol (terminal name)	input/output	item	Measurement condition	standard
A.	1	SFLR GND (Front LH Decompression Ha solenoid output used)	output	Yosho	After about 1.5 seconds after turning on the IG switch	10 ~ 14V *1
	2 Front LH Ha	SFLH ↔ GND Solenoid Sugar)	output	vassal	After about 1.5 seconds after turning on the IG switch	10 ~ 14V *1
	3	GND2++ Body earth (GND)	入力	Continuity	IG switch OFF	There is a guide
	*Twenty three	GND1 → Body Earth (GND)	入力	Continuity	IG switch OFF	導通 can be
	4 /	SR → GND ABS & TRC [Solenoid relay output no.	output	Densho	IG switch ON, after about 1.5 seconds	1.5V or less *1
	5 ABS & TRC	MT GND Motor test terminal	input	Telephone	After about 1.5 seconds after turning on the IG switch	1.5V or less * 1
	6	R++ GND (Relay drive power supply)	output	Voltage	IG switch ON	10 ~ 14V
	7	SRRR → GND Rear RH pressure reduction solenoid output	output	Voltage	After about 1.5 seconds after turning on the IG switch	10 ~ 14V *1
	8	SRRH → GND Rear RH hold \ Solenoid output	output	Densho	IG switch ON, after about 1.5 seconds	10 ~ 14V *1
	9	GND4 →→ body earth (GND)	input	lead 通	IG switch OFF	With continuity
	* 2 9	GND2++ Body Earth (GND)	input	guide	IG switch OFF	It's thin
	10	GND3. ↦ Body earth (GND)	input	Continuity	IG switch OFF	With continuity
	11/ABS & TRC	AST → GND solenoid test terminal/	input	Voltage	After about 1.5 seconds after turning on the IG switch	10 ~ 14V *1
	12ABS & TRC	MR++ GND Motor Relay Output	output	Voltage	IG switch ON, after about 1.5 seconds	10 ~ 14V *1

*1 No inspection is required when the ABS warning lamp is lit (when there is a malfunction). (C2 terminal is 2V or less for warning output, C15 terminal is for failure detection.
1V or less, other terminals are prohibited from operating the brake actuator due to the fail-safe function of the ABS & TRC computer.
Therefore, it becomes
OV.) *22L-TE cars only

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connector	ID	Terminal symbol (terminal name)	input/output	item	Measuring conditions	standard
B.	1	RL - GND (Rear LH Speed センサー入力 (−))	input	lead通	IG switch OFF	Thin
	2	RR+++ GND (リヤRH スピード sensor input (+))	input	Oscilloscope	Runs at approximately 30km/h	waveform 1 Takashi
	*3	TRA++ GND (Engine ECU 通信線出力)	output	Voltage	IG switch ON, after about 1.5 seconds	Approximately 6V ＊4
	＊2 3	TRA →→→ GND (Engine ECU\ Release output)	output	Densho	Under TRC control	2V or less*
					IG switch ON	10 ~ 14V
	4	LBL++ (GND Brake fluid level warning switch input)	input	Voltage	IG switch ON, parking brake OFF	10 ~ 14V
					IG switch ON, parking brake ON	1.5V or less
	5	EFI+ GND (Engine ECU communication (+) input node)	input	Voltage	At idle rotation	Approx. 2.5V *5
	＊2 5	TNG GND (TRC) signal input	input	Oscilloscope	IG switch ON	waveform 5 ※
	6	CSW ↔ GND (TRC cut switch input)	入力	Junior pass	IG switch ON, TRC OFF switch press and hold	With guidance
					Do not press IG switch ON, TRC OFF switch	No guide
	＊3 8	BMT ++ GND (BM power supply monitor input)	input	Voltage	IG switch OFF	10 ~ 14V
	9	RL+ → GND (Rear LH speed sensor input (+))	input	Oscilloscope	Runs at approximately 30km/h	waveform 1 ※
	10	RR-GND (Rear RH speed sensor input (-))	input	Continuity IG switch OFF		With continuity
	11	IG1 ↔ GND (IG)	input	Voltage	IG switch ON	10 ~ 14V
	12	LBL GND/Brake fluid level warning switch input	input	Densho	IG switch ON, reservoir oil level normal	10 ~ 14V
					IG switch ON, when reservoir oil level is low	1.5V or less
	13	EFI - GND (Engine ECU 通 signal (1) input)	input	Voltage idle rotation		Approx. 2.5V *5
	＊2 13	VTH++ GND input (main throttle) Human opening	input	Voltage IG switch ON		waveform 6 Takashi
	＊2 14	IDL1 GND (Main throttle Diddle switch input)	input	Densho	JIG switch ON, main throttle valve fully closed	1V or less*
					JIG switch ON, main throttle valve fully open	10 ~ 14V
	*3 14	IDL2+ GND (Subthrottle idle switch input node)	input	stomach shc	Shift lever P or N range	1V or less 10~14V
					With the main throttle valve fully open, turn on the IG switch	→ 1V or less*

12

*1 No inspection is required when the ABS warning lamp is lit (when there is a malfunction). (C2 terminal is less than 2V for warning output, C15 terminal is for failure detection. 1V or less, other terminals are OV because the brake actuator operation is prohibited by the fail-safe function of the ABS & TRC computer.)

* 22L-TE chapter only

*3 1JZ-GE cars only

*4 Under normal conditions, it repeats 10 to 14V below 1V at a cycle of 4 to 8mS. *5 During normal operation, a 2mS serial signal pulse is generated at a 4mS cycle.

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connector	ID	Terminal princess number (terminal name)	input/output	item	Measuring conditions	standard
B	15	NEO → GND (Engine speed input)	input	Oscilloscope	At idle rotation	waveform 3 *
	16	STP GND (Stop lamp switch input)	input	Voltage	IG switch ON, when brake pedal is depressed	8 ～ 14V
					IG switch ON, brake pedal released	2V or less
C	1	TC++ (GND Diagnosis) (Codesis)	ska	Densho	IG switch ON, diagnosis connector Tc E, short circuit between terminals	2V or less
					IG switch ON, diagnosis connector TcE, terminals open	10 ～ 14V
	2	WA+ GND / ABS (War Lamp Warning)	output	Voltage	IG switch OFF→ON	2V or less for about 3 seconds, then 10~14V 1
	3	WT ++ GND / TRC OFF (diagnosis output lamp)	output	Densho	IG switch ON, TRC OFF lamp on	2V or less
					IG switch ON TRC OFF When lamp is off	10 ～ 14V
	4	FR-→ GND (Front RH strike (-) · Speed sensor input)	入力	Continuity	IG switch OFF	With continuity
	5	FL+ → GND (Front LH Speed センサー入力（+）)	input	Oscilloscope running at approximately 30km/h		waveform 1 ※
	＊8 FLO GND 6 Front L (車速 Output LH)		Output Runs at approximately 30km/h			Waveform ※2
	*7 TRC + GND TRC+ 7	(+ TCCS communication (transmission)	output	Voltage at idle rotation		Approximately 2.5V 6
	+) * 3 A-- GND 7/Throttle valve Motor output		output	Densho	Shift lever P or N range, main throttle valve fully closed: 1V or less Average 5V IG switch ON	
	*2 7	P→GND (Shift position スイッチ P 入力)	input	Voltage	IG switch ON, shift lever P range	8 ～ 14V
					IG switch ON, shift lever other than P range	1.5V or less
	*3 8	A+ GND (Throttle valve Ha motor A phase output)	output	Voltage	Shift lever in P or N range, main throttle valve fully open and IG switch ON	1V or less → average 5V → 1V or less
	9	SRC → GND / TRC Reservoir cut solenoid output	output	Voltage	IG switch ON, after about 1.5 seconds	10 ～ 14V *1
	10TRC Master	SMC++ GND (quadcited output)	output	Voltage	IG switch ON, after about 1.5 seconds	10 ～ 14V ＊1
	11	SRLH GND Rear (LH Decompression Ha solenoid output)	output	Voltage	IG switch ON, after about 1.5 seconds	10 ～ 14V ＊1

*1 Inspection is not required when the ABS warning lamp is lit (at the time of failure). (C2 terminal is 2V or less for warning output, C15 terminal is for failure detection.
1V or less, other terminals will be prohibited from operating the brake actuator due to the fail-safe function of the ABS & TRC computer.
Therefore, it becomes OV.)

*22L-TE vehicles only

*3 1JZ-GE cars only

*6 During normal operation, a 3mS serial signal pulse is generated at a 6mS cycle.

*7 1JZ-GTE car only

*8 1JZ-GE car (car with skyhook TEMS)

12

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connector	端子 Zidian	Terminal number (terminal name)	input/output	item	Measuring conditions	standard
C	12	SRLR GND (Rear LH 保持 solenoid output)	output	Densho	After about 1.5 seconds after turning on the IG switch	10～14V ＊1
	13	SFRH GND (Front RH N ソレノイド出力)	output	Voltage	IG switch ON, after about 1.5 seconds	10～14V ＊1
		Ts + GND 14 Diagnosis) (Corchisis)	input	Kansho	IG switch ON Short circuit between diagnosis connector TE terminals	2V or less
					IG switch ON, diagnosis connector Tc E1 terminal 開放	10～14V
	15	D/G+ GND (diagnosis output terminal)	output	Hz	Short circuit between IG switch ON, Diagnosis connector Tc E1 terminal	Diagnosis code output
				Voltage	IG switch ON, diagnosis connector Tc E1 terminal 開放	10～14V
	16	IND→GND (slip indicator lamp)	output	Densho	IG switch ON, slip indicator lit	2V or less
					IG switch ON, slip indicator OFF	10～14V
	17	FR+++ GND (RH Sensor (hard)	input	Oscilloscope running at approximately 30km/h		waveform 1 ※
		FL— ↔ GND 18 Front LH Speed (センサー入力 (−))	input	Continuity	IG switch OFF	There is a guide
	19	#9 FRO→ GND Front (RHY Large wheel additional output)	output	Oscilloscope	Runs at approximately 30km/h	waveform 2 ※
	＊7 20	TRC— ↔ GND (TRC ↔ TCCS 通信 (送信−))	output	Densho	At idle rotation	Approx. 2.5V *6
	＊3 20	B- GND (Throttle valve Motor B output node	output	Densho	Shift lever in P or N range, main throttle valve fully closed to turn on IG switch	1V or less Average 5V → 1V or less
		*2 NGND 20 shift positions) (スイッチ N入力)	input	Voltage	IG switch ON, shift lever N range	8～14V
					IG switch ON, shift lever other than N range	1.5V or less
		*3 B+ GND 21 Throttle valve Motor B output no.	output	Sho	IG switch ON when shift lever is in P or N range and main throttle valve is fully closed.	1V or less → Average 5V → 1V or less
	＊2	ATRC → GND 22 ATRC Kyo slot huma opening output (lottle)	output	Oscilloscope	After 3 seconds or more after turning on the IG switch	waveform 4 ※

*1 Inspection is not required when the ABS warning lamp is lit (in case of failure). (The C2 terminal is 2V or less for warning output, the C15 terminal is 1V or less for failure detection, and the other terminals are OV because the brake actuator operation is prohibited by the fail-safe function of the ABS & TRC computer.)

*2 2L-TE chapter only

*3 1JZ-GE cars only

*6 During normal operation, a 3mS serial number pulse is generated with 6mS synchronization.

*7 1JZ-GTE car only

*9 Only for cars with Skyhook TEMS

12

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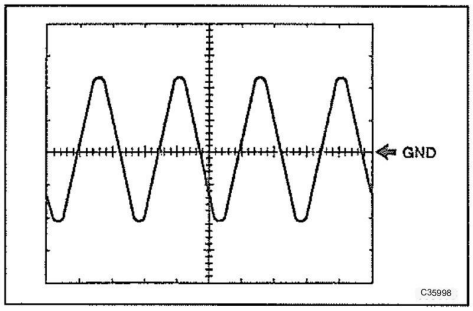
connector	端子番号	Terminal princess number (terminal name)	"Input/output	item	Measurement condition	standard
C.	* 10 SP1 GND 23	(for meter) Immediate signal output/	output	Oscilloscope	Runs at approximately 30km/h	Pulse generation ※
	24	GND1 (GND) body earth	input	Continuity	IG switch OFF	With guidance
	* 2 24	GND3- (GND) Body Earth	input	Kudzu 通	IG switch OFF	There is a guide
	25 / PRV cut	SPC → GND (monkey guide output)	output	Voltage	IG switch ON, after about 1.5 seconds	10 ~ 14V
	26 Front RH	SFRR → GND Solenoid output (減圧)	output	Voltage	IG switch ON, after about 1.5 seconds	10 ~ 14V *1

*1 No inspection is required when the ABS warning lamp is lit (in case of failure). (The C2 and C15 terminals are 2V or less for warning output, and the C15 terminal is 1V or less for fault detection, other terminals are ABS & TRC Brake actuator due to computer fail-safe function operation is prohibited, resulting in OV.)

*22L-TE vehicles only

*10 A/T vehicles only

JE2931



waveform 1

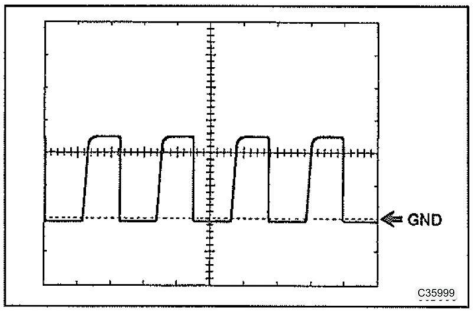
Instrument set 1 V/DIV, 2 ms/DIV

Measurement conditions Vehicle running at approximately 30km/h

注意 · As the vehicle speed (wheel rotation speed) increases, the cycle becomes shorter and the output voltage decreases. The amplitude increases.

· If there are scratches or foreign objects on the rotor tip or sensor tip, noise is added to the waveform.

· When foreign matter is attached, if there is no abnormality (scratches, dents) on the tip of the sensor after removing the foreign matter, reuse the sensor.

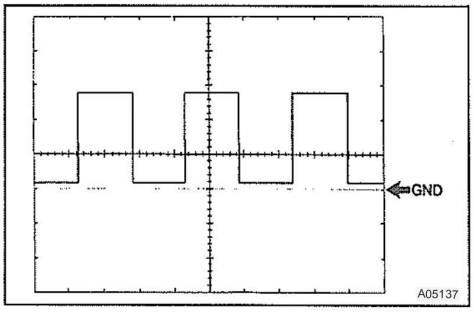


waveform 2

instrument set 5V/DIV, 2ms/DIV SP 1 is 20ms/DIV

Measurement condition While driving at a speed of approximately

注意 20km/h, the cycle becomes shorter as the car (wheel rotation speed) increases.



waveform 3

Instrument set 5V/DIV, 2ms/DIV

Measurement condition At idle rotation

Coolant temperature As the engine speed increases, the pulse period becomes shorter.

times house times times box
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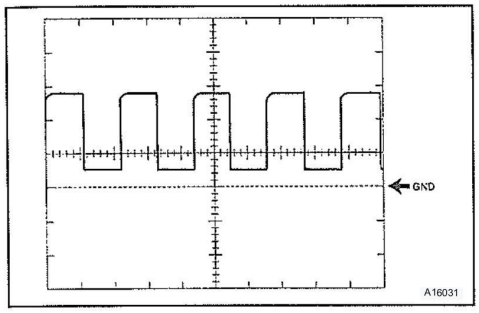
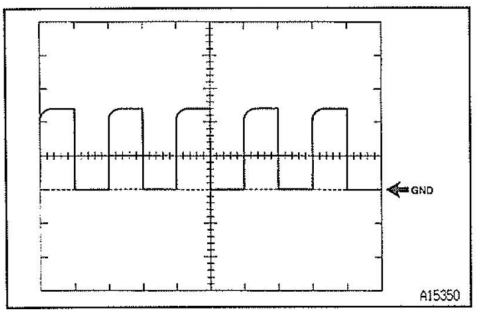


waveform 4

instrument set 5 V/DIV, 5 ms/DIV

Measuring conditions エ >>>Stop, IG ㄡi More than 3 seconds have passed after turning on

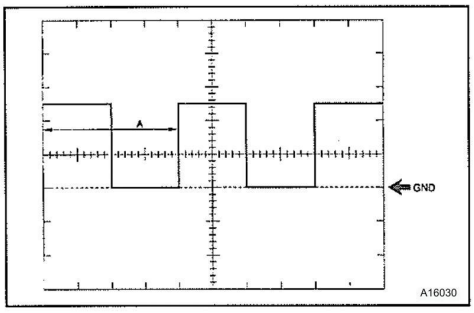
When TRC is activated, the period changes from 4 to 7 ms.



waveform 5

instrument set 5V/DIV, 50ms/DIV Measuring

conditions ㄎㄥㄐ. When rotating, IGㄨㄟy U 3 seconds or more have passed after turning on



waveform 6

Instrument set 2V/DIV,1ms/DIV

Measuring conditions エ >>>Stop,IG ㄡ´y チ ON

〈参考〉 A changes depending on throttle opening

Throttle opening	Fully closed	Full throttle
A.	4 ms	7.3ms

12

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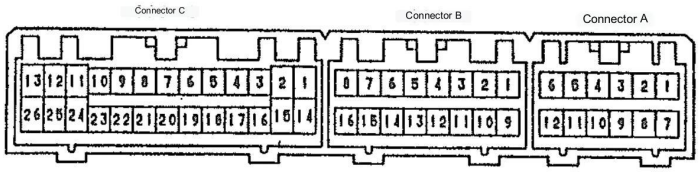
Congratulations
times

4WD vehicle



Vd-54-2

connector	ID	Terminal princess number (terminal name)	入出力	項目	Measurement condition	standard
A.	1	SFLR GND (Front LH Decompression solenoid output)	output	電圧	IG switch ON, after about 1.5 seconds	10～14V ＊1
	2	SFLH GND (Front LH maintenance 持 solenoid output)	output	電 Sho	IG switch ON, after about 1.5 seconds	10～14V **1
	3	GND2→ (GND) Body Earth	input	導通	IG switch OFF	導通 can be
	4	MR→GND / ABS motor relay output	output	Densho	IG switch ON, pump motor stopped	10～14V *1
					IG switch ON, pump motor rotating	1.5V or less *1
	5	AST →→ GND (ABS Solenoid test terminal)	input	Voltage	IG switch ON, after about 1.5 seconds	10～14V ＊1
	6	R＋ ↔ GND (Relay drive power supply)	How to appear	Voltage IG switch ON		10～14V
	7	SRR GND (右系統減圧 Solenoid valve)	output	Voltage	IG switch ON, after about 1.5 seconds	10～14V ＊1
	8	SRH GND/ Right hold solenoid valve	output	Voltage	After about 1.5 seconds after turning on the IG switch	10～14V ＊1
	9	GND1＋ (GND) Body Earth	input	Junior pass	IG switch OFF	With guidance
	11	MT→GND / ABS motor test terminal	input	Voltage	IG switch ON, after about 1.5 seconds	1.5V or less 1
	12ABS	SR→GND Solenoid relay output	output	Voltage	IG switch ON, after about 1.5 seconds	2V or less 1
B.	1	RL-GND (Rear LH Speed (センサー入力))	input	Continuity	IG switch OFF	With guidance

*1 No inspection is required when the ABS warning lamp is constantly lit (failure). (The C2 terminal is 2V or less for warning output, the C15 terminal for is 1V or less for failure detection, and the other terminals are OV because the brake actuator operation is prohibited by the file safe function of the ABS computer.)

12

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connector	ID	Terminal symbol (terminal name)	入 output	item	Measuring conditions	standard
B.	2	RR + → GND (Rear RH speed sensor input (+))	input	Oscilloscope	Runs at approximately 30km/h	Waveform 1 ※
	3	TRA GND Engine (ECU\ Eight communication output)	output	Voltage	IG switch ON, after about 1.5 seconds	Approximately 6V *2
	4	SGND ↔ Body Earth (GND)	input	Continuity	IG switch OFF	With continuity
	5	SS1 GND (Steering sensor SS1 input sensor)	input	Oscilloscope	IG switch ON. Rotate the steering wheel slowly.	1V or less 4V or more Repeat waveform 4,5 ※
	6	EFI + GND (Engine ECU 通信線（+）入力)	input	Voltage at idle rotation		Approx. 2.5V *3
	8	BAT ↔ GND (BAT power supply)	input	Voltage	all the time	10 ～ 14V
	9	RL+ GND Rear LH Speed センサー入力 (+)	input	Oscilloscope	Runs at approximately 30km/h	Waveform 1 ※
	10	RR-GND Rear RH speed sensor (-)	入力	Continuity	IG switch OFF	With continuity
	11	IG1 GND (IG)	input	Voltage	IG switch ON	10 ～ 14V
	12	SP1 GND (Vehicle speed signal output for meter)	output	Oscilloscope	Runs at approximately 30km/h	Waveform 2 ※
	13	SS2 →→ GND Steering sensor SS2 input sensor)	input	Oscilloscope JIG switch ON, slowly rotate the steering wheel		Waveform 4 that repeats 1V or less and 4V or more *
	14	EFI-GND (Engine ECU 通信線（−）(input))	input	Voltage idle rotation		Approx. 2.5V *3
	15	SSC GND Steering sensor (SSC input)	input	Oscilloscope	IG switch ON, slowly rotate the steering wheel	Waveform 5 that repeats 1V or less and 4V or more ※
	16 (2737)	STP + GND Ha switch input	input	Voltage	IG switch ON, when brake pedal is depressed	8 ～ 14V
					IG switch ON, brake pedal released	1.5V or less
C	1	To GND [Diagnosis cord terminal - system]	input	電圧	IG switch ON, diagnosis connector Tc E, short circuit between terminals	1.5V or less
					IG switch ON Diagnosis connector Between TcE1 terminals Open	10 ～ 14V
	2	WA - GND (ABS Warni Lamp Warning)	output	Voltage	IG switch OFF→ON	2V or less for about 3 seconds, then 10~14V *1
	3	4WDW GND (4WD Warning (Running))	output	Voltage IG switch OFF→ON		2V or less for about 3 seconds, then 10~14V *4

12

*1 No inspection is required when the ABS warning lamp is constantly lit (in case of failure). (The C2 terminal is 2V or less for warning output, the C15 terminal is 1V or less for failure detection, and the other terminals are for the failsafe function of the ABS computer to prohibit operation of the brake actuator. OV becomes.)

*2 Under normal conditions, it repeats 10 to 14V below 1V with a cycle of 4 to 7mS.

*3 During normal operation, a 2mS serial signal pulse is generated with a 4mS cycle.

*4 Inspection is not required when the 4WD warning lamp is constantly lit (in case of failure)

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connector	One terminal number	Terminal symbol (terminal name)	input/output	item	Measurement condition	basis
C	4	FR--→ GND Front RH Speed Hasensors Card	input	Continuity	IG switch OFF	With guidance
	5	FL+ GND (Front LH Speaker (Sensor input(+))	input	Oscilloscope	Runs at approximately 30km/h	waveform 1 ※
	7	GS1 → GND (G sensor input 1)	input	Voltage	IG switch ON, vehicle horizontal state	4~6V or 7~11V
	8	FREE → GND (sensor differential) フリー入力	input	Densho	IG switch ON, diagnosis connector OP1E terminal opening of min	10 ~ 14V
					IG switch ON, diagnosis connector OP1 E, terminal short circuit	1.5V or less
	13	SFRH GND (Front RH holding solenoid output)	output	Voltage	After about 1.5 seconds after turning on the IG switch	10 ~ 14V *1
	14	TS GND /Diagnosis) Connector	input	電圧	IG switch ON, diagnosis connector TcE, short circuit between terminals	2V or less
					IG switch ON, diagnosis connector TcE, terminals open	10 ~ 14V
	15	D/G GND (Diagnosis output 端子)	output	Hz	IG switch short circuit ON, Diagnosis connector TcE terminals	Diagnosis code output
				Densho	IG switch ON, diagnosis connector TcE, between terminals "Opening"	10 ~ 14V
	16	4WD → GND slip indicator Trump output -tar)	output	Voltage	IG switch ON	2V or less for about 3 seconds then 10~14V
	17	FR+++ GND Front RH Speed Sensor (4)	input	Oscilloscope running at approximately 30km/h		waveform 1 *
	18	FL- GND Front LH speed sensor input (-)	input	Mizodori	IG switch ON	With continuity
		GST ↔ GND 20G sensor test output	output	Densho	IG switch ON, after about 1.5 seconds	4~6V then 1V or less
	21	GS2 + GND (G sensor input 2)	output	Voltage	IG switch ON, vehicle horizontal state	4~6V
		SP2 GND 23/ A/T Output shaft rotation speed Yahata SP2 output	output	Oscilloscope	Runs at approximately 30km/h	waveform 2 *
		SLC GND 24/ 4WD linear Solenoid (-) Output/	output	Voltage	IG switch ON	2V or less
		SLC+ GND 25/4WD linear Solenoid (+) Output	output	Voltage	IG switch ON	waveform 3 *
	26	SFRR → GND (Front RH Pressure reduction solenoid output)	output	Voltage	IG switch ON, after about 1.5 seconds	10 ~ 14V *1

*1 No inspection is required when the ABS warning lamp is constantly lit (in case of failure). (The C2 terminal is 2V or less for warning output, the C15 terminal is 1V or less for failure detection, and the other terminals are OV because the brake actuator operation is prohibited by the file safe function of the ABS computer.)

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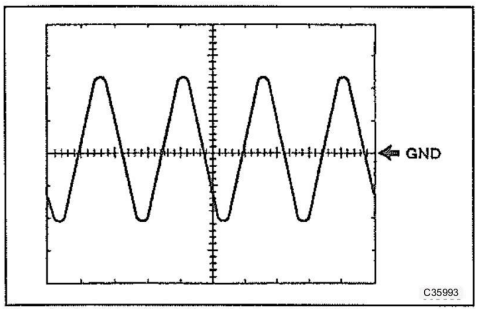


waveform 1

instrument set 1 V/DIV, 2 ms/DIV

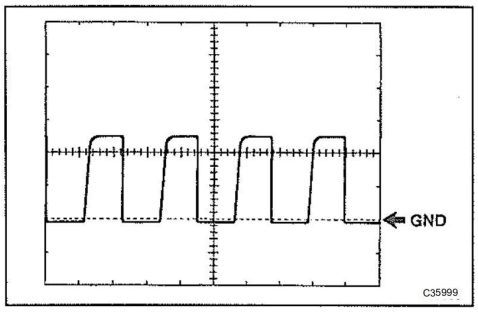
Measuring conditions Traveling at a speed of approximately 30km/h

Note · As the vehicle speed (wheel rotation speed) increases, the cycle becomes shorter and the output voltage decreases.

The amplitude increases.

· If there are scratches or foreign objects on the rotor tip or sensor tip, noise will be added to the waveform. · When foreign matter is attached, abnormalities (scratches, dents) may occur on the sensor tip after removing the foreign matter.

If not, reuse it.

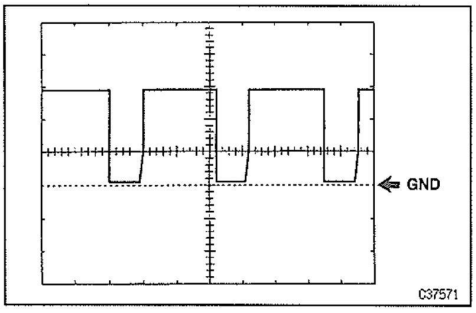


waveform 2

instrument set 5V/DIV, 2ms/DIV SP1 is 20ms/DIV

Measurement condition Running at a vehicle speed of approximately 20km/h

•Caution The cycle becomes shorter as the vehicle speed (wheel rotation speed) increases.

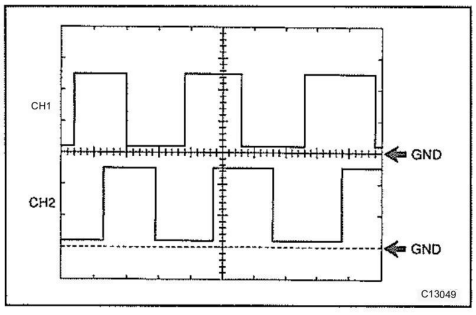


waveform 3

Instrument set 5V/DIV, 2ms/DIV

Measurement conditions IG switch ON

12



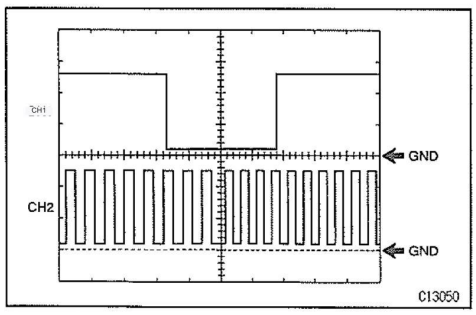
waveform 4

Instrument set 2 V/DIV, 20ms/DIV

Measuring conditions Immediately after turning on the IG switch, turn the steering wheel alternately from side to side.

Note · The faster you turn the steering wheel, the shorter the cycle will be. Ru.

•SS1 signal and SS2 signal are out of phase.



waveform 5

Instrument set 2V/DIV, 50ms/DIV

Measuring • conditions Immediately after turning on the IG switch, turn the steering wheel left and turn the wheels alternately

· SSC is for steering neutral position detection

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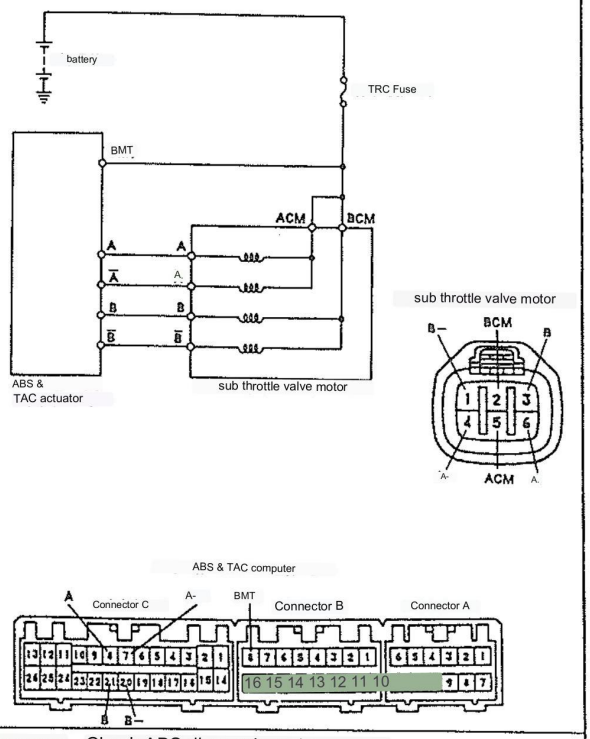
Troubleshooting by diagnosis code (TRC edition)

1 diagnosis code

<Reference> When a malfunction occurs, the warning lamp lights up and the fail-safe (normal brake) function is activated. When the problem is resolved and the warning lamp goes out, the TRC system will return to normal operation.

ABS & TRC (TRC OFF warning lamp display) car

code number	Diagnostic items Examination contents ① Diagnosis condition 2 Abnormal condition abnormal period	Inspection area
*1 24	Sub-throttle valve motor system disconnection, short circuit Inspection method: Inspect each part individually based on the relationship diagram (see page 12-86) For the sub-throttle valve, refer to the engine (see page 2-52) - Power supply voltage check - Wire harness check - Connector Perform inspection (see review) (ACM, A, $\overline{A}$, B, $\overline{B}$, BCM, BMT) ① Ignition switch ON, sub throttle bar ② Disconnection or short circuit in the sub-throttle valve motor circuit (wire harness system. Inside the motor) ③ 500ms or more ① When the ignition switch is ON ② BMT terminal voltage 1V or less ⑤ 5 seconds or	(figure)
*1 25	more Sub throttle valve motor system malfunction ① While the sub-throttle valve motor is running ! ② The opening calculation voltage value of the sub-throttle valve motor and the voltage value of the sub-throttle position sensor The difference is 1.5V or more ⑤ 4 times continuously during traction (throttle control) operation or while the ignition switch is ON 12 times	
43	ABS type 異常 ② ABS warning lamp lights up	Inspection method: Check ABS diagnosis code (follow troubleshooting section)



*1 1JZ-GE car only

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code	Diagnostic items Examination contents ① Diagnosis condition 2 Abnormal condition abnormal period	Inspection area
44	Abnormal engine speed (NEO) ① Under TRC control ② ABS & TRC Computer NEO terminal voltage is OV or 5V (no pulse) ③ 0.2 seconds or more	Inspection method: Based on the circuit diagram •Wire harness disconnection between engine control computer and ABS & TRC computer Check TCCS diagnosis code (follow TCCS troubleshooting section)
*2 46	VTH Communication line error (VTH) ② An abnormal periodic pulse (less than 3mS or greater than 9mS) is input to the VTH terminal of the computer. ③ 5 seconds or more ② A pulse is input to the VTH terminal of the computer. do not have ③ 5 seconds or more	Inspection method: Based on the circuit diagram •Wire harness between engine control computer and ABS & TRC computer (VTH) • Main throttle position sensor (engine reference) (see page • 249) Engine control computer (engine reference) (see page 3-31)
*1 1 time 47	Subthrottle position sensor idle switch Disconnection, short (IDL2) ① Initial check in progress ② Both the ON and OFF states of the sub-idle switch cannot be detected while the sub-throttle valve motor is operating. ① Computer IDL2 terminal voltage V or less (Sub-idle switch ON state) ② Sub-throttle position sensor VTA terminal Sub-idle switch ON when voltage is 1.5V or higher ③ 1 second or more	Inspection method: Based on the circuit diagram ・ Wire harness disconnection or short between sub-throttle valve position sensor ~ ABS & TRC computer (IDL2) ・ Subthrottle position sensor (Refer to the engine) (Refer to page 2-51) - Check the TCCS diagnosis code (follow the TCCS troubleshooting section)
*1 48	Subthrottle position sensor system signal abnormality (VTA) ① Always ② Sub-throttle position sensor VTA terminal voltage is 4.9V or higher ③ 1 second or more ① Always ② Sub-throttle position sensor VTA terminal Voltage is 0.1V or less ③ 1 second or more	Inspection method: Based on the circuit diagram • Wire harness between subthrottle position sensor and engine control computer・ Subthrottle position sensor (engine reference) (see page 251)・ Check TCCS diagnosis code (follow TCCS troubleshooting section)

*1 1JZ-GE vehicles only
*2 2L-TE vehicles only

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code number	Diagnostic items Diagnosis contents ① Diagnosis conditions ② Abnormal condition abnormal period	Inspection area
*2 49	Engine control computer monitor abnormality (TRA, ATRC TNG) ① Always ② TRA, ATRC signal line is disconnected or shorted ③ 5 seconds or more ① Under TRC control (2) The TNG terminal of the computer is 10~14V. ⑧ 0.5 seconds or more ① Out of TRC control 2 The TNG terminal of the computer is 10~14V. ③ 5 seconds or more	Inspection method: Based on the circuit diagram • Engine control computer ~ Wire harness, connector between ABS & TRC computers (TRA, ATRC, • TNG) Engine control computer
51	Engine system abnormality ① Engine speed 500r/min or more ② Check engine warning lamp lights up *1 · Check engine warning lamp lights up or slip indicator flashes *3 ③7 seconds or more	Inspection method: TCCS diagnosis code (Follow the TCCS troubleshooting section) ETCS diagnosis code (1JZ-GTE vehicles only) · Engine control computer Wire harness and connector between ABS & TRC computers
51	Engine system abnormality ① TRC control and engine speed 550r/min or more ⑦ The computer's TNG terminal is OV or abnormal. Period (18mS or less) ③ 1 second or more ① Out of TRC control and engine speed is 550r/min or *2 ② more TNG terminal of computer is OV or abnormal Period (18mS or less) ③ 5 seconds or more ① Engine speed 550rpm/min or more ② Normal pulses (pulse period 24~78mS) are not input to the TNG terminal of the computer. However, the TRC diagnosis code "49" is ③ For more than 10 seconds	Inspection method: ECD diagnosis code (Follow ECD troubleshooting section) •Wire harness and connector between engine control computer → ABS & TRC computer
52	Oil reservoir level drop abnormality [LBL+, LBL-] ① Ignition switch ON ② Computer's LBL- terminal is 1.5V or less (low oil in oil reservoir) ③ 10 seconds or more	Inspection method: Oil reservoir

*1 1JZ-GE vehicles only
*2 2L-TE vehicles only
*3 1JZ-GTE vehicles only

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code	Diagnostic items Examination contents ① Diagnosis conditions ② Abnormal condition abnormal period	点 检 部 位
*1 53	Engine control computer communication error (TRA, EFI+, EFI-) ① Always ② Make sure the computer's TRA terminal is OV or 10 ～ 14V ③ 5 seconds or more ① Engine speed 500r/min or more or vehicle speed 60km/h or more ② Computer EFI+, EFI one terminal is OV or 5V ③ 5 seconds or more	Inspection method: Based on the circuit diagram • ABS & TRC computer · Engine control computer ~ ABS & TRC computer-to-computer wire harness (TRA, EFI+, EFI-disconnection, B short) Connector inspection, wire harness Perform a nesting check TCCS diagnosis code confirmation (Follow TCCS troubleshooting section)
*3 53	Electronic throttle computer communication line abnormality 〔EFI+, EFI－, TRC+,TRC－〕 ① Engine speed 500r/min or more or vehicle speed 60km/h or more 2 Throttle control computer ~ ABS & TRC Communication line error between computers (EFI+, EFI - terminal of computer is OV or 5V) ③ 5 seconds or more ①Always ② Abnormal communication line between ABS & TRC computer and throttle control computer (TRC+, TRC - terminal on computer is OV or 5V) ③ 5 seconds or more ① Always ② Throttle control computer ~ engine control computer communication line error ③ 5 seconds or more	Inspection method: Based on the circuit diagram · Throttle control computer ~ABS & Wire harness between TRC computers (EFI+, EFI-, TRC+, TRC- disconnection, +B short) Check the connector. Inspect the wiring harness between the throttle control computer and ABS & TRC computer (ETC+, ETC- disconnection, + B short).
Always lit	Computer system abnormality ② Computer system abnormality	See "Troubleshooting by problem phenomenon"
	Power supply voltage abnormality [IG1] ② Power supply voltage 16~18V or more	· IC regulator · Alternator

*1 1JZ-GE vehicles only

*3 1JZ-GTE vehicles only

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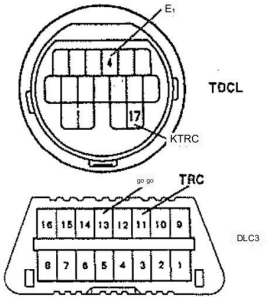
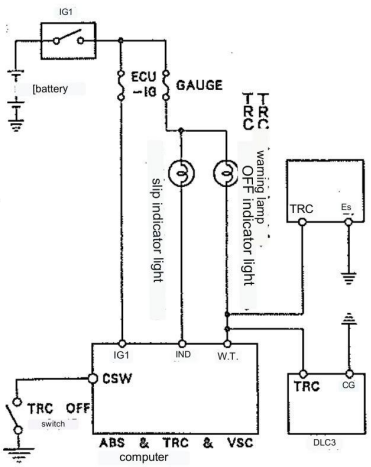
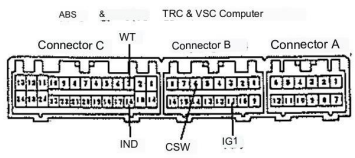
Troubleshooting by problem phenomenon
(TRC OFF warning lamp display)

1 Troubleshooting by problem phenomenon

Malfunction phenomenon		Related circuit diagram
Diagnosis contents ① Diagnosis conditions ② Abnormal condition	Inspection area	
TRC OFF lamp always on		
① After turning the ignition switch OFF, disconnect the computer connector and turn the ignition switch ON. ②② TRC OFF lamp lights up	• Wire harness between TRC OFF lamp and computer WT terminal	
②6 TRC OFF Lamp off	• Computer failure · Wire harness between CSW and computer CSW terminals · TRC OFF switch	
TRC OFF lamp does not light up for 3 seconds immediately after turning on the ignition switch		
① After turning the ignition switch OFF, disconnect the computer connector, short-circuit the body ground or between TRCE1 of TDCL or TRCCG of DLC3 on the WH side and WT side, and turn on the ignition switch. ② TRC OFF lamp off	· Meter unit defective · TRC OFF Lamp • defect Wire harness (meter ~ computer, meter ~ DLC3, TDCL (between TRC) Disconnection · GAUGE ~ Lumb disconnection	
②White TRC OFF lamp lights up	· Computer failure	
Slip indicator lamp always on		
① After turning off the ignition switch, the computer Remove the connector from the ignition Switch ON ② ③ Slip indicator lamp lights up	• Slip indicator lamp ~ Computer IND terminal wire harness body chute	
②6 Slip indicator lamp goes off	· Computer failure	
The slip indicator lights up for 3 seconds immediately after the ignition switch is turned on. do not have		
① After turning off the ignition switch, the computer Remove the connector from the engine, turn on the ignition switch, and connect the IND terminal on the vehicle side to the body ground. Yes ②② Indicator lamp goes off	· Meter unit defective · Slip indicator lamp bar Bad lube · Wire harness (GAUGE fuse-meter, meter-computer) disconnected	
26 Indicator lamp lights up	· Computer failure	
The TRC OFF lamp was flashing but turned off and there is no memory of the diagnostic code.		
Insufficient brake fluid, check TCCS diagnosis code → If no abnormality is found, the abnormality has returned to normal.		

12

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Individual inspection (TRC edition)

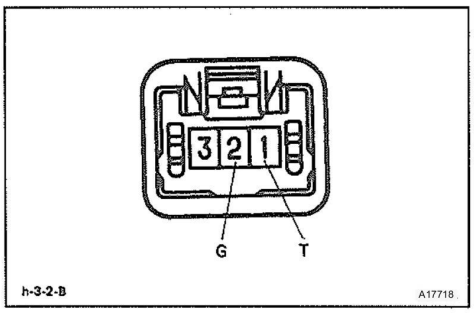
Brake actuator (Refer to
"Individual inspection (ABS edition)" - "Brake actuator")

ABS & ABS Relay
(Refer to "Individual Inspection (ABS Edition)" - "ABS Relay")

Stop lamp switch (Refer
to "Individual inspection (ABS edition)" - "Stop lamp switch")

front speed sensor
(Refer to "Individual Inspection (ABS Edition)" - "Front Speed Sensor")

Rear speed sensor (Refer
to "Individual inspection (ABS edition)" - "Rear speed sensor")

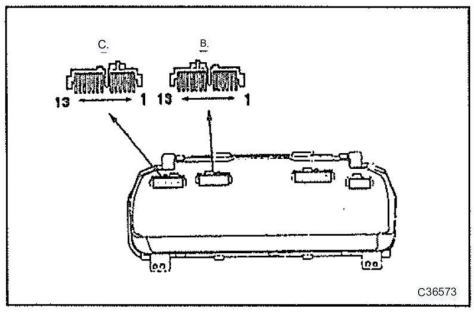


TRC OFF switch

1 Continuity

check (1) When operating the switch, check for continuity between the TG terminals.

Ru.	
standard	When the switch is not pressed - ••••••••No continuity
	When the switch is pressed •••••••• • •• Continuity exists



Slip indicator and TRC OFF lamp

1 Lamp lighting inspection

(1) Check that each lamp lights up when battery voltage is applied to each terminal.

	battery +	battery ⊖
slip indicator light	B9	C4
TRC OFF indicator light	B9	C7

JB3758

ABS & TRC computer (see
"Individual inspection (ABS edition)" and "ABS computer")

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[T0040001]

Precautions while working

1 Precautions when removing the battery terminal

(1) When installing the battery terminal, make sure to
It is necessary to initialize the sensor values, so please follow the steps below.
Do the work.
①Apply the parking brake, shift the shift lever to P range,
and connect the battery terminal.
② Turn on the ignition switch. At this time, do not move or
shake it for about 15 seconds.
③ Check that the VSC warning lamp is off. (2) Even after performing the
above steps, VSC still does not work even after more than 1 minute has passed.
If the warning lamp does not go out, turn off the
ignition switch and repeat step ②. <Reference>
If the warning lamp does not turn off after one operation, "ダイ
the Ag 36" may remain as a past failure.

2 Precautions when using a drum tester

(1) When using a drum tester, be sure to turn off the ignition
switch to prohibit VSC operation, start the engine with
the diagnosis connector terminals shorted, and then take
measurements.
•Caution - Check that the VSC warning lamp is flashing.
•Secure the vehicle with a lock chain.

3 Precautions when working with VSC

(1) Do not attach or remove VSC-related parts unless necessary, as doing
so may disrupt the adjustment.
(2) When performing VSC-related work, follow the instructions in the main text to prepare for the work.
Ensure preparation, confirmation of work completion, etc.

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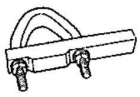
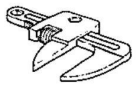
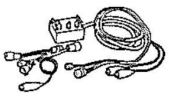
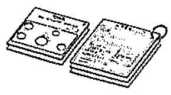
Hydro Booster System & VSC (Vehicle Stability Control)

supplies

SST

	09318-12010	Transfer bearing adjusting nut wrench	Accumulator removal and removal
	09612-00012	Rack- and-pinion steering rack housing stand	Brake master cylinder ASSY W/A BS & TRC fixing
	09922-10010	Variable open wrench	Removal/removal of each sensor

計 器

	09082-00012	toyota electrical tester	Each part is for use as a pointer.
	(09083-00060)	mini test lead	For each part point school
	09843-18020	Diagnosis check wire	Diagnosis connector for short circuit
	09709-29017	LSPV gauge set	For oil measurement
	09990-00141	ABS actuator checker and subharness	For checking brake actuator operation
	09990-00390	ABS actuator checker sub harness N	For checking brake actuator operation
	09990-00240	ABS actuator checker seat G	For checking brake actuator operation

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	09991-50100	toyota diagnosis reader set	For reading diagnosis codes
	09991-50320	Program IC card Engine system 3	For reading diagnosis codes
Hydro Booster Pressure BHYD-100S gauge handled by Banzai Co., Ltd.	14001		For oil pressure measurement
Hydro booster pressure gauge IHYD-100S Treated as Iyasaka Co., Ltd.	14002		For oil measurement
oscilloscope	20501		For oscilloscope waveform inspection

Oils and fats Others

Toyota genuine brake fluid 2500H	32503	For air release
Dry battery (1.5V x 4)	52504	For single acceleration sensor inspection

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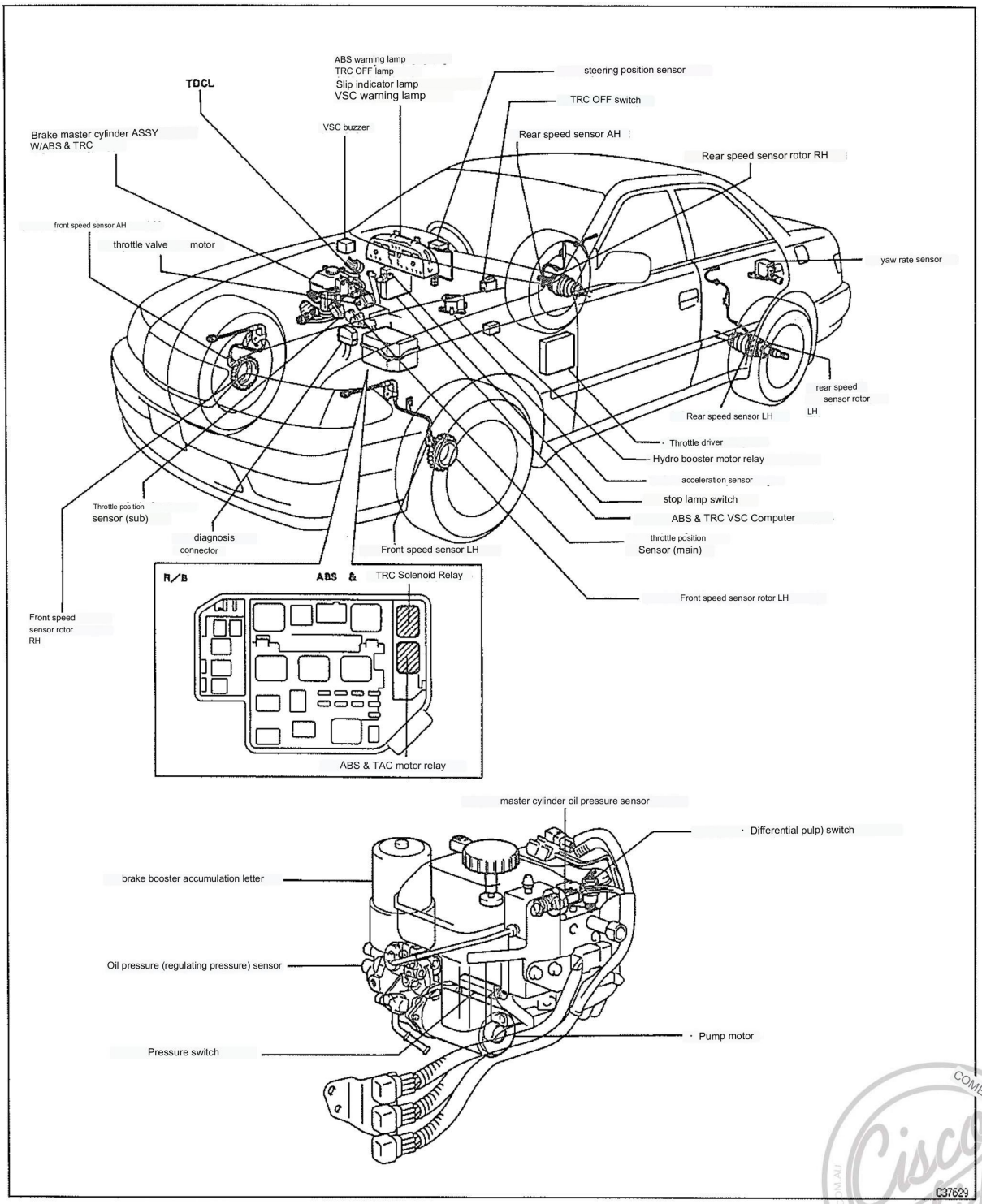
T0048052

Parts layout diagram



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Brake master cylinder ASSY

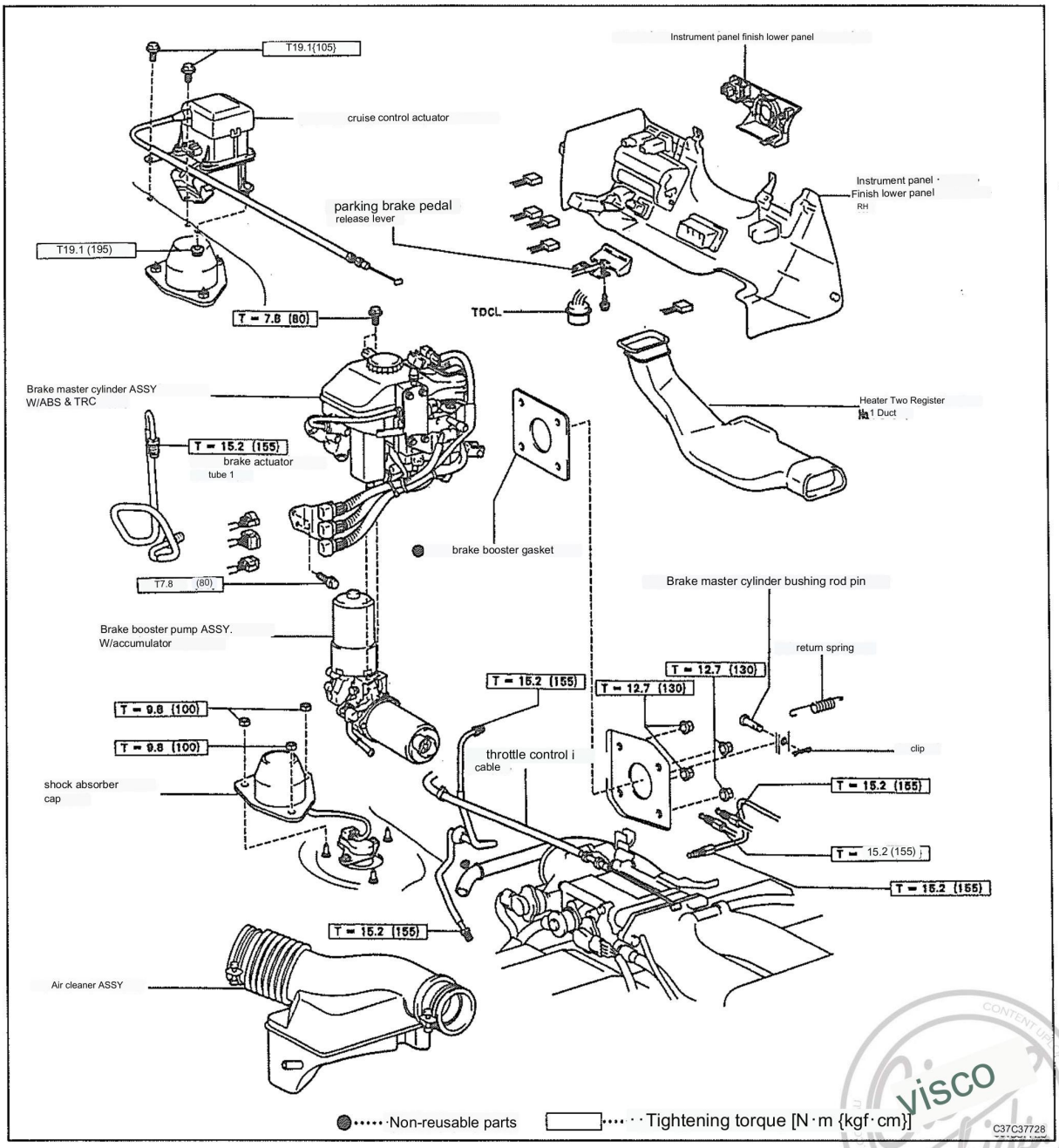
W/ABS & TRC

Detachment configuration diagram

注意 Be sure to relieve pressure from the power supply system before starting work. (ignit

Depress the brake pedal more than 40 times with the switch OFF.

nothing)



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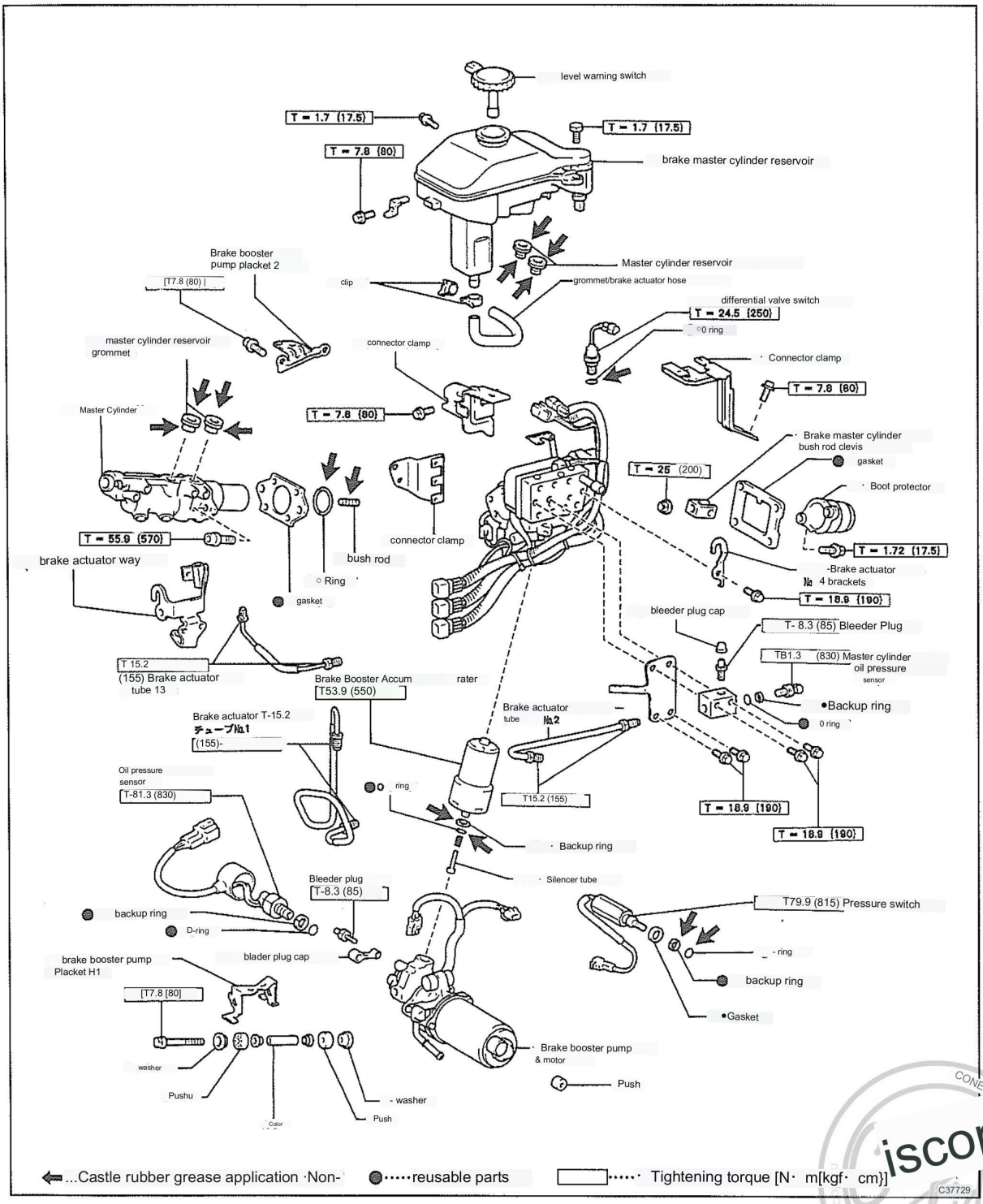
steamed noodles times box

Exploded configuration diagram



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Points to note when removing master cylinder ASSY W/ABS & TRC

Do not turn on the ignition switch until the work is completed.

1 Power supply system pressure relief

(1) With the ignition switch OFF, press the brake pedal more than 40 times.

Press upward to release pressure from the power supply system. (Reference)

When the pressure in the power supply system is released, the force applied to the brake pedal becomes heavier.

It becomes.

2 Remove the shock absorber cap (vehicles equipped with

3 TEMS) Disconnect the control cable

4 Speed control actuator removal

5 Brake booster pump ASSY W/accumulator removal

(1) Remove the connector, hose and brake actuator tube No.1.

(2) Remove the two bolts and remove the brake booster pump ASSY W (/accumulator).

Brake actuator tube No. 1 (red) is under high pressure.

Never deform it as it may cause damage.

6 Disconnect the connector

7 Removing the clamp

8 Brake tube separation

Instrument panel under cover No.1 removal 9

10 Instrument panel lower pad removal

11 Heater two Register duct No. 2 removal

(Refer to "Body" - "Instrument panel" for 9,10,11)

12 Brake master cylinder ASSY W/ABS & TRC Tori

Remove

(1) Remove the spring, clip and pin, and disconnect the brake pedal and push rod clevis.

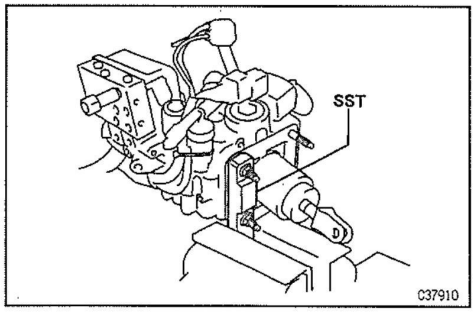
The stop lamp lights up, so check the stop lamp fuse.

Keep it aside.

(2) Remove the 4 nuts and remove the brake master cylinder ASSY W/ABS & TRC.

12

Brake master cylinder ASSY W/ABS & TRC decomposition



1 Boot protector and gasket removal

2 Brake master cylinder ASSY W/ABS & TRC

(1) Using SST, brake master cylinder ASSY W/

Fix ABS & TRC in a vise. SST

09612-00012

<Reference> Use only the rod-shaped SST.

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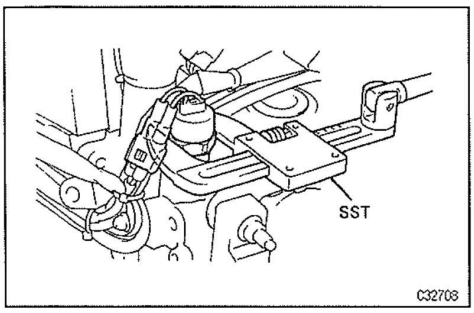


3 Differential valve switch removal

(1) Disconnect the

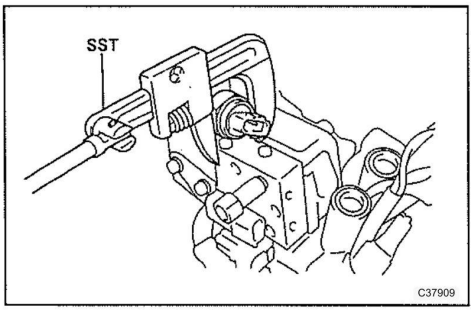
connector. (2) Use SST to remove the differential valve switch.

Zusu.

S S T 09922-10010

(3) Remove the O-ring from the differential valve

switch.



4 Master cylinder oil pressure sensor and brake

Removing the

bracket (1) Remove the bolt and remove the harness clamp.

(2) Using a union nut wrench, tighten the master cylinder tube.

Remove it. (3)

Using SST, check the master cylinder oil pressure sensor.

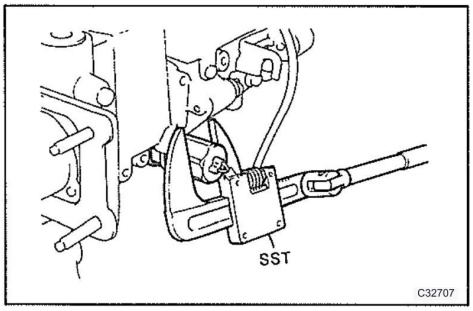
Remove the sir.

S S T 09922-10010

(4) Remove the O-ring and backup ring from the master

cylinder oil pressure sensor. (5)

Remove the four bolts and remove the bracket.



5 Pressure switch removal

(1) Remove the pressure switch clamp and taping,

Disconnect the connector.

(2) Use SST to remove pressure switch and gasket.

Remove. S

ST 09922-10010

(3) From the pressure switch, remove the O ring and backup ring.

Remove the plug.

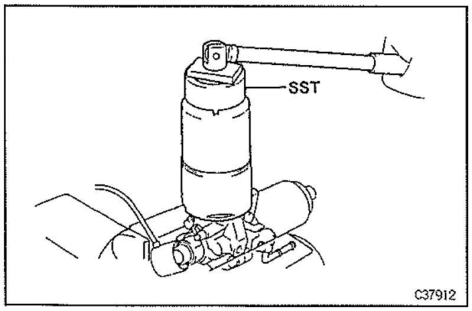
6 Removing the master

cylinder (see "Brake master cylinder")

12

Brake booster pump ASSY W/accumulator

disassembly



1 Removing the brake booster accumulator

(1) Using SST, remove the accumulator.

S S T 09318-12010

(2) Remove the O-ring and backup ring from the accumulator.

Remove it.

(3) Remove the spring and silencer tube from the pump

vinegar.

Be careful not to let foreign objects get inside the pump.

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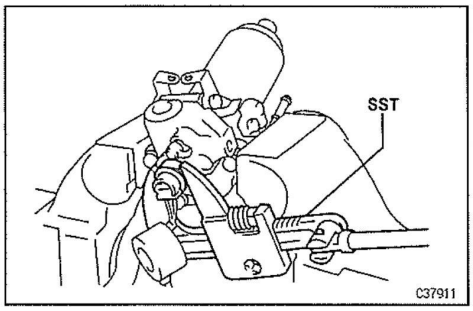

2 Oil pressure sensor removal

(1) Using SST, remove the oil pressure sensor. SST

09922-10010

(2) O-ring and backup from oil pressure sensor

Remove the ring.

3 Brake booster pump bracket removal (1)

Loosen the bolts and remove the bracket and bushing.

Disposal of brake booster accumulator

(Gas release) method

1 Accumulator disposal

(1) Slowly loosen the gas plug and leave it until you no longer hear the gas blowing sound.

Caution Do not put your face directly above the accumulator.

<Reference> The gas is colorless, odorless, and harmless (nitrogen gas). Brake master cylinder ASSY W/ABS &

Points to note when assembling TRC

1 Master cylinder assembly

("Brake master cylinder")

2 Brake system air bleed

(Refer to "Brake inspection and adjustment - How to bleed air from the

3 Brake pedal inspection and adjustment

((Refer to "Brake inspection and adjustment" - "Brake pedal inspection and adjustment")

brake system") 4 Brake master cylinder ASSY W/ABS & TRC machine performance check

(Refer to "Functional Inspection" - "Brake Master Cylinder ASSY W/ ABS & TRC")

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T0049058

front speed sensor

(Anti-lock Brake System (ABS) & Traction Control System (TRC)" - "Speed sensor")

T0049057

rear speed sensor

(Anti-lock Brake System (ABS) & Traction Control System (TRC)" - "Speed sensor")

T0049056

subthrottle position sensor

(Refer to "2JZ-GE Engine" - "EFI System" - "Throttle Body")

T0049059

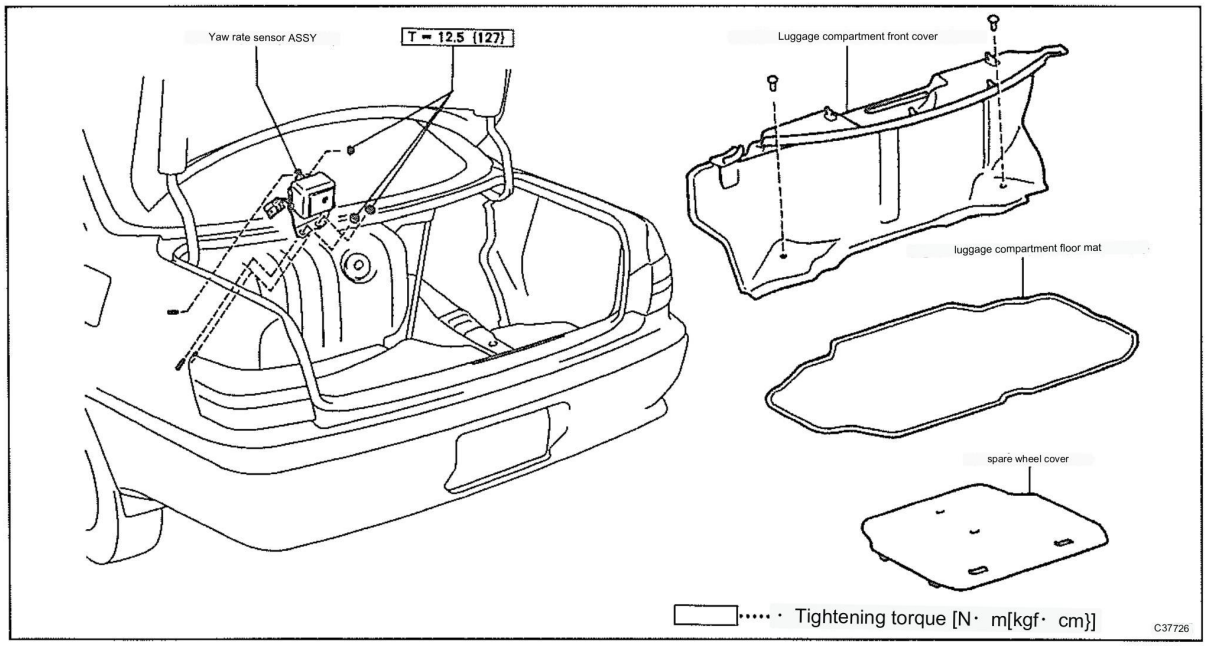
sub throttle valve motor

(Refer to "2JZ-GE Engine" - "EFI System" - "Throttle Body")

T0049061

yaw rate sensor

If you drop the sensor, replace it with a new one.



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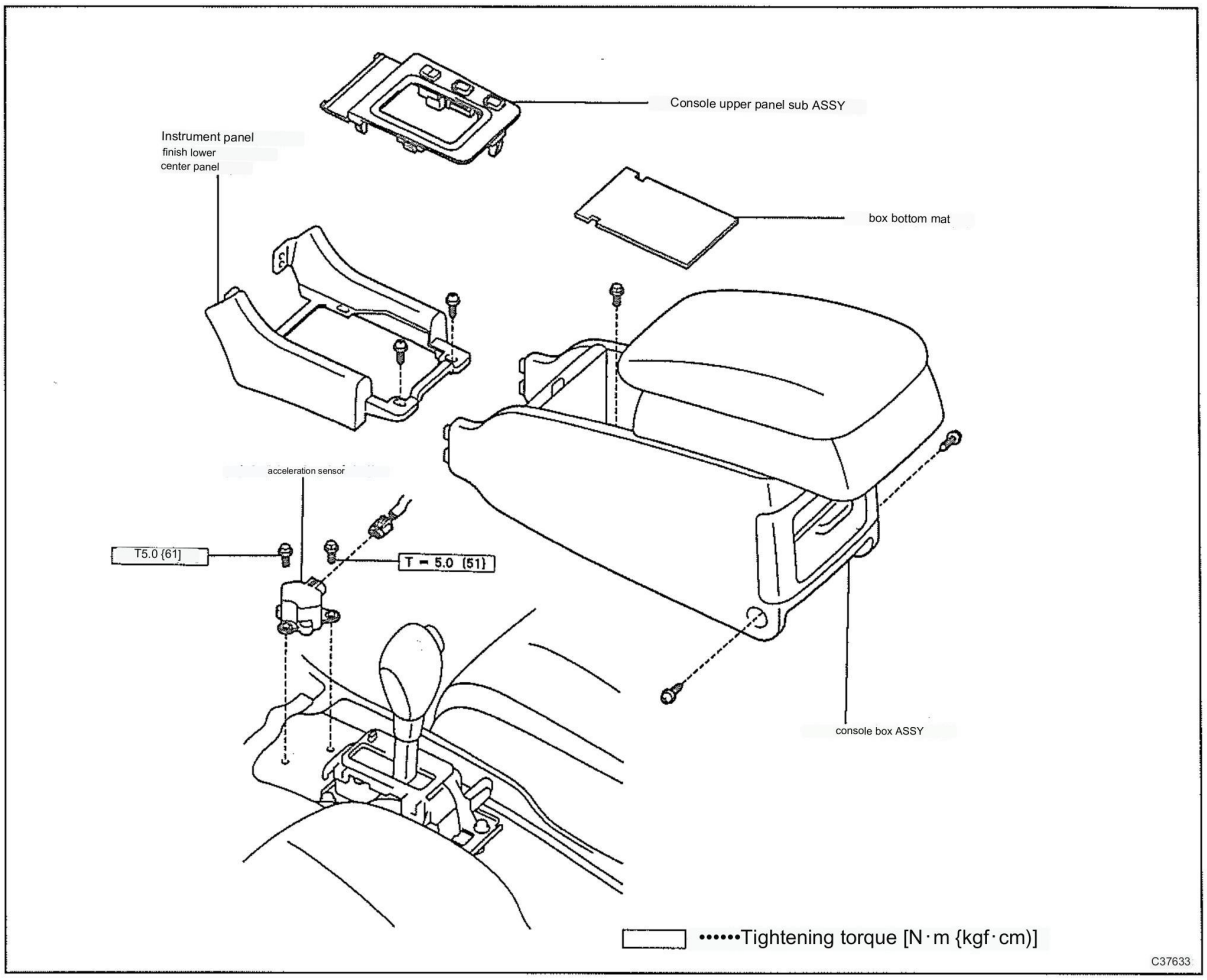
T0049062

acceleration sensor

- If you drop the sensor, replace it with a new one.
- Do not store the sensor removed from the vehicle upside down.



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T0049063

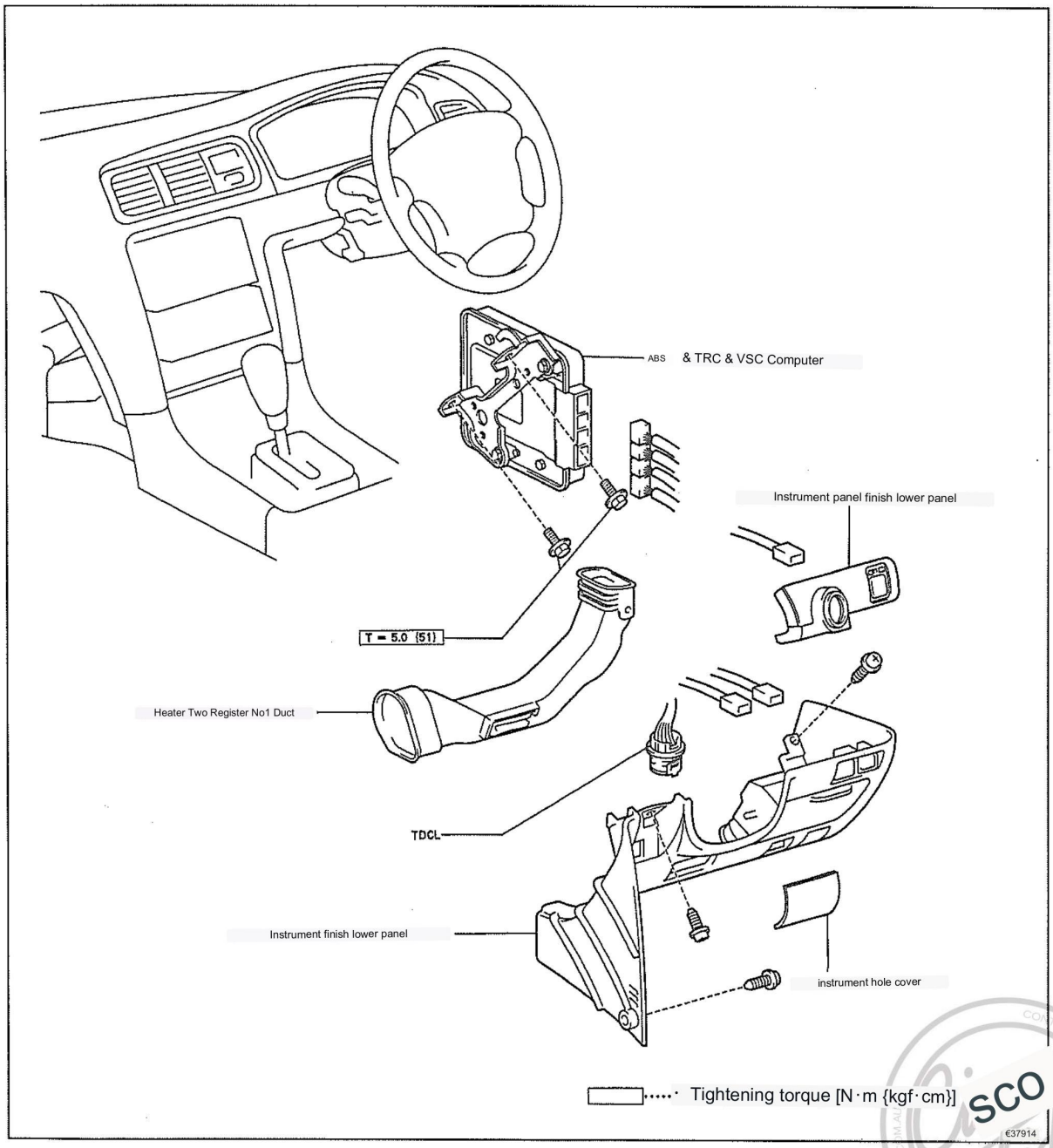
ABS & TRC & VSC computer

注意 When installing or removing the computer, be sure to disconnect the battery terminals.

Remove.

(Refer to "General" - "Precautions during inspection and maintenance" - "VSC")

Detachment configuration diagram



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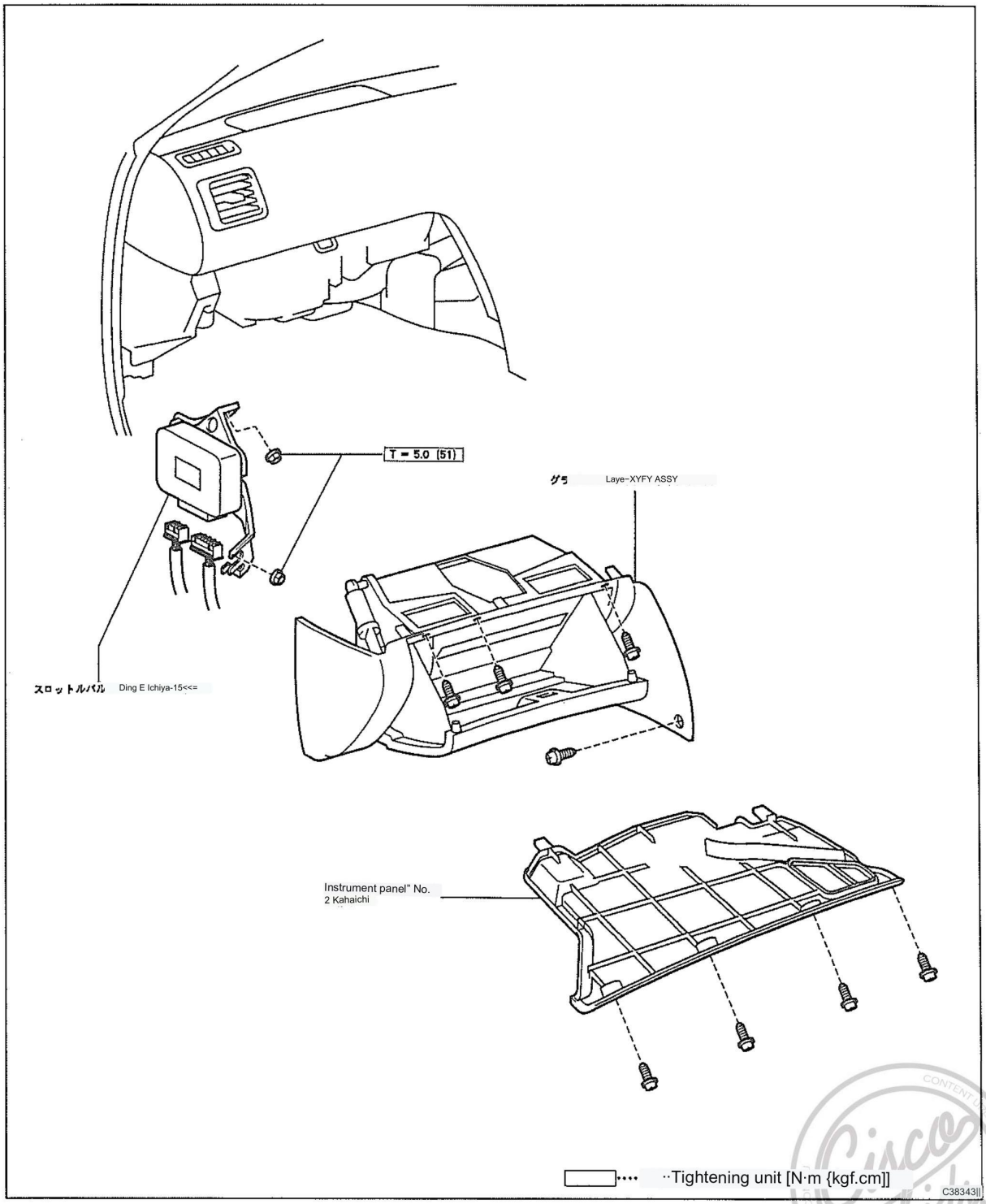
Mataguchiy トルHACCHOYANITYA - 2nd 5 IHAYI

Delivery configuration diagram



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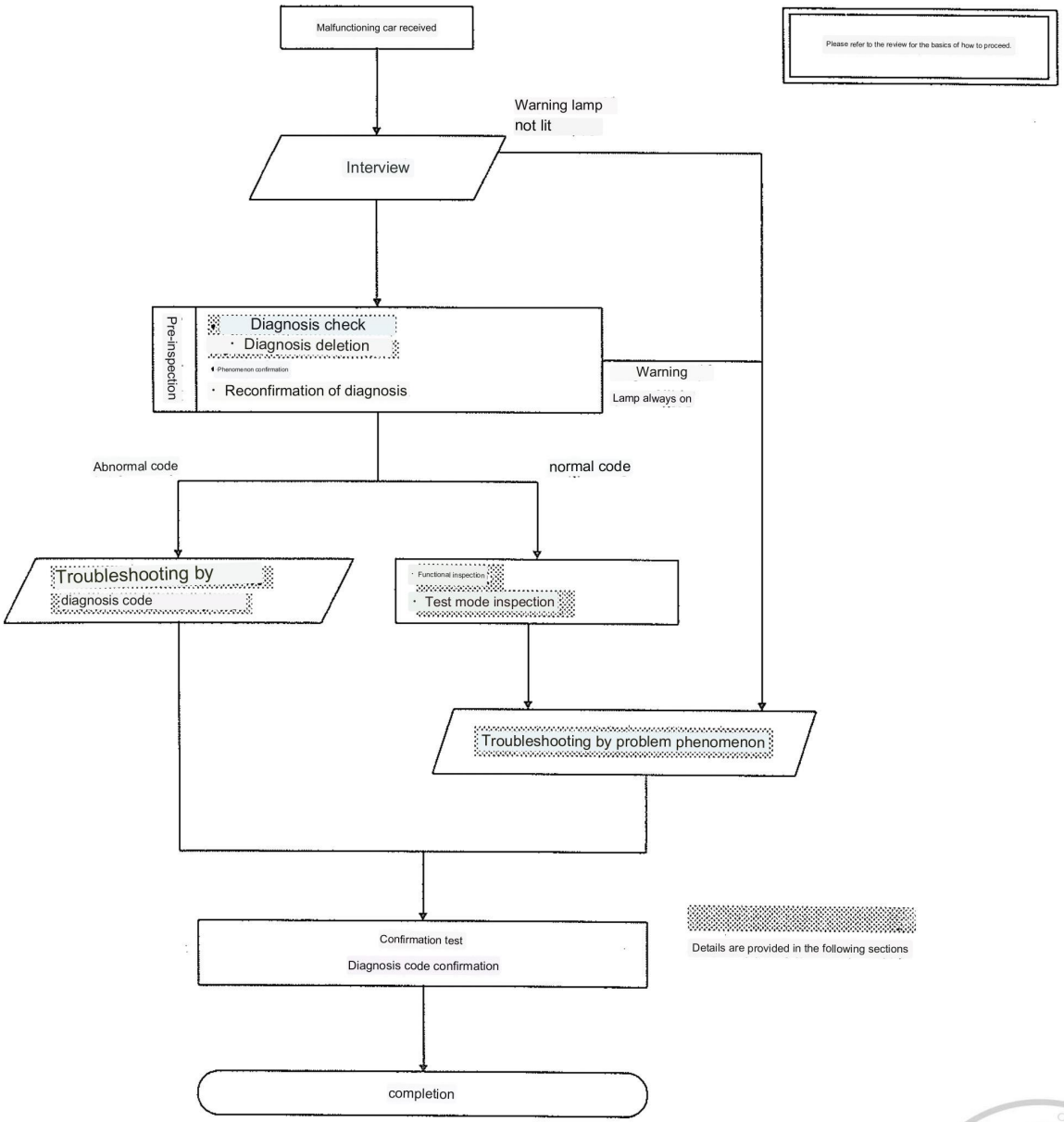
T0049054

troubleshooting

How to proceed with troubleshooting

1 How to proceed with troubleshooting



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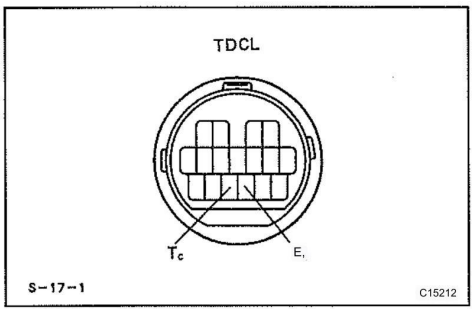
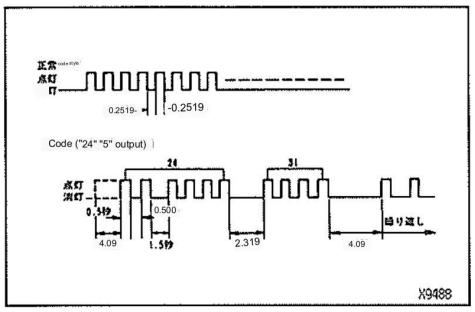




2 Diagnosis check

(ABS and VSC warning lamp)

Reading by combination meter

(1) Short-circuit between the To E terminals of TDCL.

注意 • Never place the connector in the wrong short-circuit position, as it may cause a malfunction.

· Perform with the vehicle stopped.

(2) Turn on the ignition switch and turn on the VSC warning run.

Read the number of flashes on the screen.

注意 When a TRC error occurs, the TRC OFF lamp may also light up at the same time. However, it does not output the code.

<Reference> - When normal, the light turns on for 0.25 seconds and turns off for 0.25 seconds repeatedly.

· If there is one error code, the same code will be output at 4-second intervals, and if multiple codes are output, different codes will be output. It outputs at intervals of 2.5 seconds, and after one cycle it outputs again at intervals of 4 seconds.

When outputting multiple codes, select the one with the smallest code number. Output in order.

(3) Open the TcE1 terminal of the diagnosis connector. If there

注意 is an abnormality, remember the diagnosis code after repair. to erase.

Reading by Toyota Diagnosis Reader

(1) Diagnosis using a diagnosis reader code

Read.

〈参考〉 Engine system code...81C

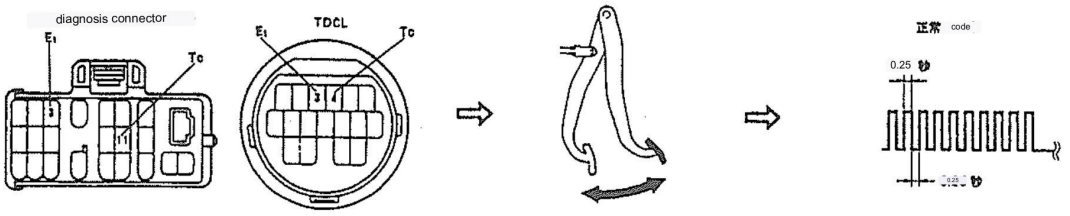
3 Diagnosis code deletion

12

(1) Shorten the distance between the diagnosis connector 11 (Tc) 3 (E) terminals or the 4 (Tc) 3 (EL) terminal of TDCL, and turn the ignition switch ON. do.

(2) Depress the brake pedal 8 or more times in 5 seconds.

(3) A normal code is output. Make sure you are there.



· Deletion may not be possible if the failure continues.

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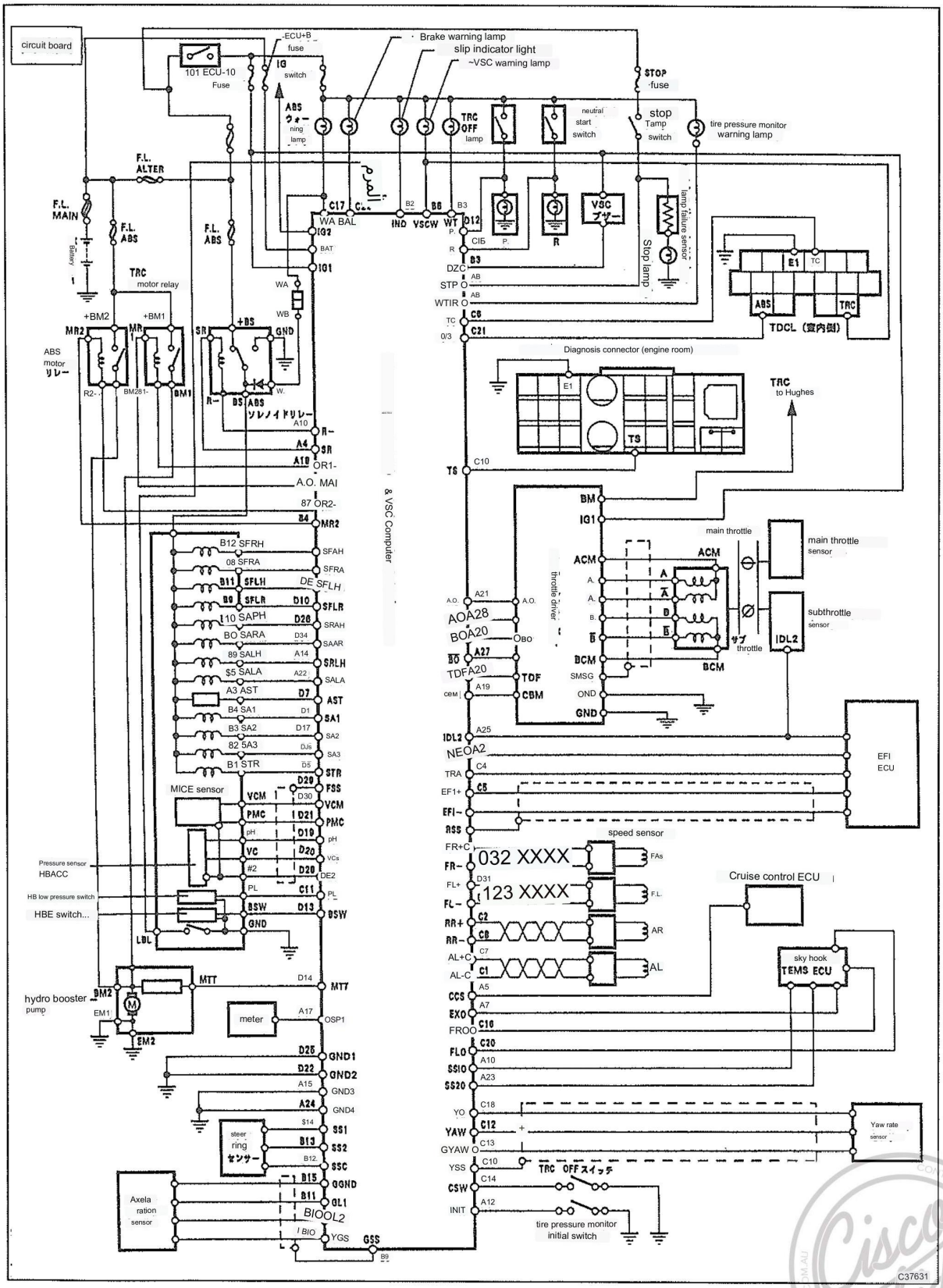

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Troubleshooting by diagnosis code

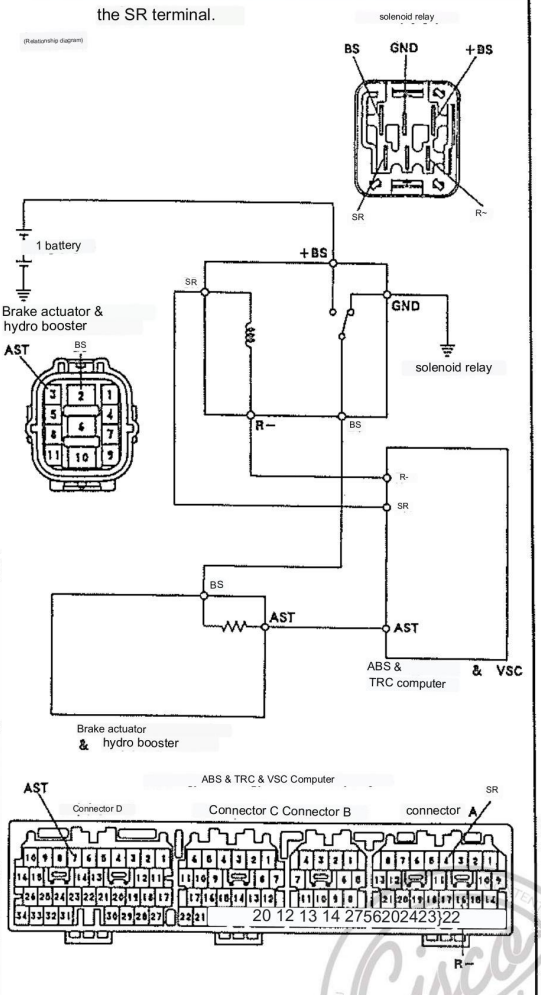
diagnosis code

If no abnormality is found after checking each item in the inspection area, inspect the computer.

ABS warning display side

Please refer to the code "49" as it is the same as the ABS & TRC equipped vehicle.

code number	Diagnostic items Diagnosis contents ① Diagnosis conditions ② Abnormal condition abnormal period	Inspection area
11	ABS & TRC solenoid relay system disconnection or short circuit ① When the SR terminal of the computer is 8.3V or more (solenoid relay ON) (approximately 2 seconds after the ignition switch is turned ON) ② The AST terminal (solenoid relay ON confirmation signal terminal) of the computer is not 10~14V ③ 0.2 seconds or more	Inspection method: Inspect each part individually based on the relationship diagram (see page 1280) · Power supply voltage check · Wire harness check · Connection (Reference) When diagnosis is detected, it is a fail-safe and there is no output from the SR terminal.
12	ABS & TRC solenoid relay system +B short ① When the computer's SR terminal is 1V or less (solenoid relay OFF) (only immediately after the ignition switch is ② turned on) The computer's AST terminal is 10~14V ③ 0.2 seconds or more	



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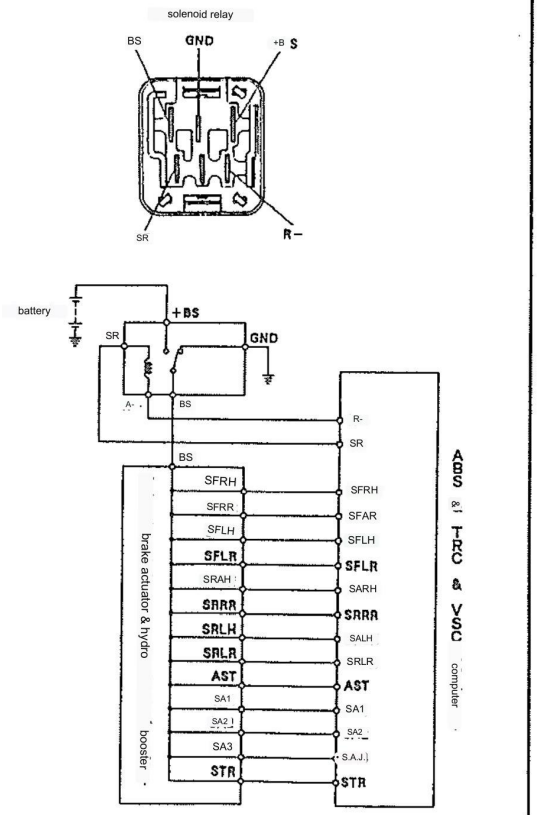
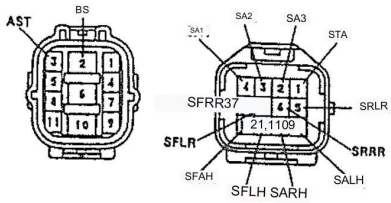
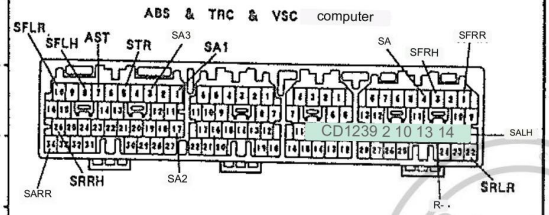
code number	Diagnostic items Diagnosis contents ① Diagnosis conditions ② Abnormal condition ③ Abnormal period	Inspection area
21	Actuator front right solenoid system error (SFRR, SFRH) ① Computer SR terminal 8.3V or higher (Solenoid relay ON) Solenoid (2) disconnection or short circuit condition ③ 0.05 seconds or more The diagnostic content of items "22" to "27" below is the same.	Inspection method: Inspect each part individually based on the relationship diagram (see pages 12-137), wire harness inspection, connector inspection (see general explanation) I do (Relationship diagram)  Brake actuator & hydro booster  
22	Actuator front left solenoid system abnormality (SFLR, SFLH)	
23	Actuator rear right solenoid system error (SRAH, SRRR)	
24	Actuator rear left solenoid system error (SRLH, SRLR)	
25	SA1 Solenoid Constant [SA1]	
26	SA2 solenoid always [SA2]	
27	SA3 solenoid error (SA3)	
28	STR Solenoid Normal (STR)	

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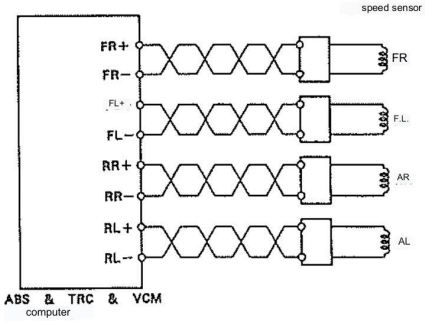
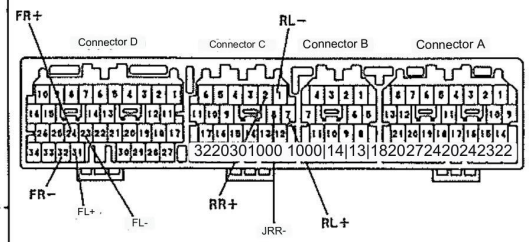
code number	Diagnostic item Diagnosis details ① Diagnosis conditions 2 Abnormal condition abnormal period	point area
31	Front right speed sensor system signal abnormality [FR+, FR-] ① While driving at a speed of 10 km/h ② or more, the pulse signal from the speed sensor has stopped. ③ 15 seconds or more (however, 200 seconds or more if both RL and RR wheels are abnormal at the same time) ① Driving at a speed of 15 km/h or more ② Momentary loss of pulse signal from speed sensor ③More than 7 times ① Driving at a speed of 20 km/h or more ② Abnormal signals occur continuously in the pulse signal from the speed sensor. Occurred ③ More than 75 times in 5 seconds ① Ignition switch ON 2 Speed sensor system disconnection ③ 0.5 seconds or more The following items "32" to "34" are diagnostic details.	Inspection method: Inspect each part individually based on the relationship diagram (see page 12-81) · Conduct power supply voltage check, wire harness check, and connector check (see overview) (Relationship diagram) speed sensor  ABS & TRC & VSC Computer 
32	Front left speed sensor system signal abnormality [FL+, FL-]	
33	Rear right speed sensor system signal abnormality (RR+, RR-) Rear speed sensor system signal abnormality (1G-FE (A/T) vehicles)	
34	Rear left speed sensor system signal abnormality (RL+, RL-)	
41	Power supply abnormality ① Driving at a speed of 3 km/h or more ② Computer IG1 terminal voltage is 9~10V or less ③ 10 seconds or more	IC regulator

12

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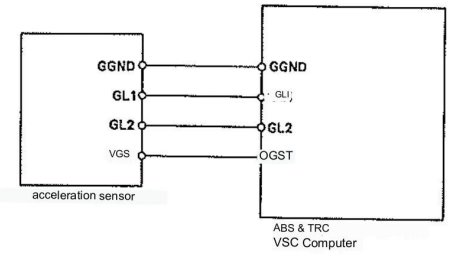
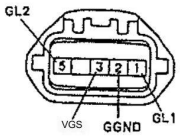
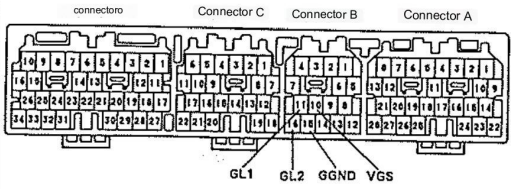
code number	診断項目 Examination contents ① Diagnostic conditions Abnormal condition abnormal period	Inspection area
43	Acceleration sensor sticking error 〔GL1, GL2〕 ① From when the vehicle speed reaches 30km/h until it reaches 0km/h ② The sensor output does not change even once. ③ 16 consecutive times after connecting the battery	Inspection method: Inspect each part individually based on the relationship diagram (see pages 12-140), • perform voltage inspection, wire harness inspection, and connector inspection (see general explanation) (Relationship diagram) 
44	Acceleration sensor system disconnection, short circuit 〔VGS, GL1, GL2, GGND〕 ① After turning on the ignition switch ② GL1 or GL2 is below 0.5V or above 4.5V ③ 1.2 seconds or more ① Vehicle speed 0km/h ② GL1 and GL2 output is large ③ 60 seconds or more ① After turning on the ignition switch ② VGS is below 4.35V or above 5.65V ③ 1.2 seconds or more ① Ignition switch ON (2 Momentary loss of GL1 or GL2 signal ③More than 7 times	acceleration sensor 
45	Acceleration sensor output error 〔GL1, GL2〕 ① Vehicle speed 30km/h or more ② Calculated from acceleration sensor output and wheel speed. There is a large difference in vehicle acceleration/deceleration. ③ 60 seconds or more	ABS & TRC & VSC Computer 
51	Differential valve (differential pressure) switch system error 〔BSW〕 ① When you step on the brake (2) - Differential pressure switch short signal ON (computer BSW terminal is OV) - Differential pressure is detected while the pressure sensor and pressure switch are determining high pressure switch is OFF ③ 1 second or more	*Refer to “Fault location and diagnosis code list” and circuit diagram.

12

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code number	Diagnostic items Diagnosis contents ① Diagnosis conditions Abnormal condition Abnormal period	Inspection area
52	pump motor long run 〔MTT〕 ① After turning on the ignition switch ② Pump motor is energized for a long time ③ 9 minutes or more	Refer to "Fault location and diagnosis code list" and circuit diagram.
53	Motor relay system abnormality ① Pressure sensor is determining low pressure or performing additional control ② Motor relay does not turn ON (Computer MTT terminal voltage is not 10~14V) ① If the pressure sensor is determining high pressure and performing additional control. When you're not there ② Motor relay contact is ON (Computer MTT terminal voltage 10~14V)	
54	Pressure Switch and Pressure Sensor system abnormality 〔PH, PL〕 ① Ignition switch ON ② Pressure sensor (PH 0.2 seconds or more) ③ Pressure sensor and switch system ground short, disconnection ① Vehicle speed 3km/h or more ② IG2 disconnection ③ 10 seconds or more	
55	Accumulator filled gas leakage error 〔MTT〕 ① While the ignition is ON ② Accumulator pressure drops to 70% or less compared to normal. there is a possibility that	
56	Accumulator low pressure abnormality 〔PL〕 ① After 57 seconds after turning on the ignition ② Pressure sensor and pressure switch are determined to be low	
Always lit	Computer system abnormality Abnormal power supply voltage ①Full vehicle speed ② Computer IG terminal voltage is 16~18V or higher	·battery · IC regulator

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List of failure locations and diagnosis codes

breakdown / place \ diagnosis code / Code contents			51	52	53	54	55	56
			Differential pressure S/W abnormality energized	long time	Relay error	Sensor, S/W abnormality	Accumulator Gas release Low pressure	Accumulator rater
pressure sensor system	pH	low-cost failure		○				
		Disconnection, high voltage failure (including VC disconnection/short circuit, E2 disconnection)				○		
		GND short				○		
		Characteristic deviation OFF pressure is lower than PL				○		
		chattering					○	
Pressure switch system	PL	low-cost failure		○		○		○
		GND disconnection				○		
		High voltage failure, GND short						
		Characteristic deviation: Higher than PH OFF				○		
		Characteristic deviation & pressure drop due to sudden stepping						○
		chattering				○		
switch system (Switch)	GND short		○					
	GND disconnection, differential pressure (OFF) failure, characteristic deviation		○					
pump motor system	pump Motor	Air entrapment		○				○
		GND disconnection, disconnection below MTT (GND side)		○				○
		lock → FL fused +B short → FL fused			○			
	MTT signal line	line cutoff			○			
		+B bite		○				
		Chattering (short time disconnection, +B jamming)					○	
Accumulator filled gas release							○	○
Mori Ichikei	Yusei			○				
booster Department	Relief valve Characteristic deviation	Relief pressure is lower than PL (Including leakage)		○				○
		Relief pressure is higher than PHON pressure Low		○				
				○				○
	Spool valve sticking, lever breaking, accumulator ~ spool pulp clogging		○					
power supply	IG2 disconnection					○		

<Win> ・ ○ marks indicate codes that may be output.

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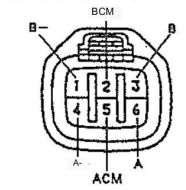
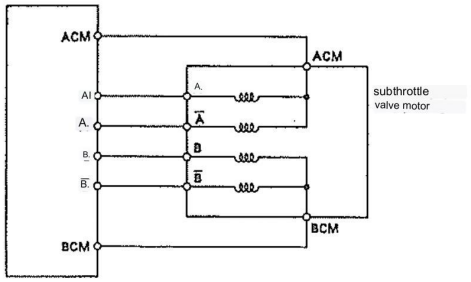
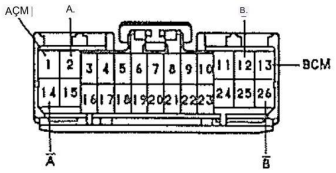
VSC warning display side

Codes “43”, “48”, and “53” are the same as ABS & TRC (TRC OFF lamp display), so refer to them.

The code "Continuously lit" is the same as for ABS only cars, so please refer to it.

* Same as 1JZ-GE car with ABS & TRC

code number	Diagnostic items Diagnosis contents ① Diagnosis conditions Abnormal condition Abnormal period	Inspection area
24	Sub-throttle valve motor system disconnection. short (ACM, $\overline{A}$, A, B, $\overline{B}$, BCM, BMT) ① Short circuit: While the ignition switch is ON Disconnection: While the sub-throttle valve motor is running ② Disconnection or short circuit in the sub-throttle valve motor circuit ③ 4 or more times while the ignition switch is ON ① When driving the sub-throttle valve motor: ② Disconnection or short circuit in the sub-throttle valve motor circuit ③ 4 or more times while the ignition switch is ON	Inspection method: Inspect each part individually based on the relationship diagram (see pages 12-142) For the sub-throttle valve, refer to the engine (See page 2-52) ・ Voltage check・ Wire harness check・ Connector check (see review) Sub throttle valve motor 
25	Sub throttle valve motor malfunction ① The sub-throttle valve motor is operating. ② The difference between the sub-throttle valve motor opening calculation voltage value and the voltage value of the sub-throttle position sensor is 1.5V or more. ③ The sub-throttle valve motor is operating twice or twice in a row. 8 times while the ignition switch is ON	throttle valve motor driver 
26	Sub throttle valve motor system abnormality ① When the sub-throttle valve motor is fully open ② The difference between the opening calculation voltage value of the sub-throttle valve motor and the voltage of the sub-throttle position sensor is 1V or more. ③ 5.4 seconds or more	throttle valve motor driver 

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code number	Diagnostic items Diagnosis contents ① Diagnosis conditions 2 Abnormal condition abnormal period	Inspection area
28	Throttle valve motor driver communication line abnormality [CBM, TDF, AO, AO-, BO, BO-] ① Always ② The TDF terminal voltage of the computer is fixed at OV, or 5V fixed ③ 1 second or more ① When the sub-throttle valve motor is not driven ② When the computer's CBM terminal voltage is OV ③ 1 second or more ① When ignition switch is ON or subthrottle Valve motor fully open ② Wire harness between ABS & TRC & VSC computer and throttle valve motor driver Disconnection, short circuit for ③ 1 second or more	Inspection method: Inspect each part individually based on the relationship diagram (see pages 12 to 142) - Power supply voltage check - Wire harness check - Connector (Relationship diagram) Perform inspection (see review) ABS & TRC & VSC Computer throttle valve motor driver A.O. AD AO- AO- DO OBO BO- BO- TDF TDF CBM CBM Sub throttle valve motor a0- BO TOP AQ AO CBM ABS & TRC & VSC Computer Connector D Connector C Connector B Connector A AO AO- BO- TDF BO CBM
31	Steering position sensor system error {SS1, SS2, SSC} ① Always ② Steering position sensor (SS1, SS2) voltage value is below 0.6V or above 6.4V ⑧ 10 times or 1 second or more while the ignition switch is ON ① Always ② Between steering position sensor signals (SS1, SS2) short Steering angle of ③ is 225° or more ① Always ② Disconnection or short between steering position sensor signals (SSC) ③When the steering angle changes by more than 360°	Inspection method: Inspect each part individually based on the relationship diagram (see page 969) Conduct power supply voltage check, wire harness check, and connector check (see overview) (Relationship diagram) IG1 battery IG SS1 SS2 SSC steering sensor ABS & TRC & VSC Computer steering sensor IG SSC SS2 SS1 ABS & TAC & VSC Computer Connector D Connector C Connector B Connector A SS1 SS2 SSC

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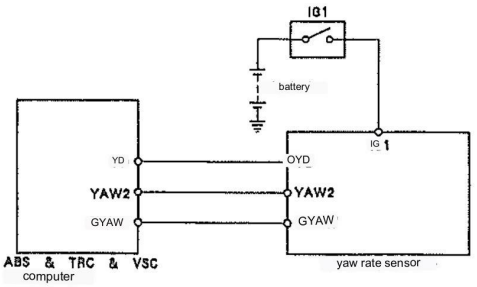
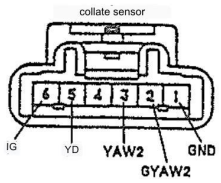
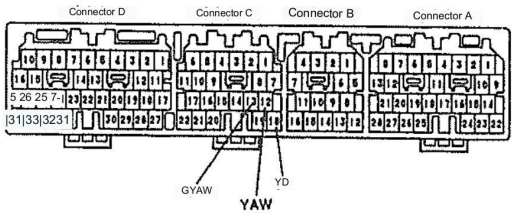
code number	Diagnostic items / Diagnosis details ① Diagnosis conditions ② Abnormal condition abnormal period	Inspection area
32	Acceleration sensor abnormality (GL1, GL2) ① Vehicle speed is 10 km/h or more ② GL1 (GL2) output does not change and GL2 (GL1) output changes ③ 30 seconds or more	• Inspection of the acceleration sensor (see pages 12-140)
33	Yaw rate sensor system disconnection, short [YAW, GYAW) ① Always ② YAW terminal voltage is 0.25V or less or 4.75V or more ③ 10 times or 1 second or more while the ignition switch is ON	Inspection method: Inspect each part individually, power supply voltage, wire harness, and connectors (see overview) based on the relationship diagram. (Relationship diagram) 
34	Yaw rate sensor system signal abnormality [YAW, GYAW, YD) ① Always ② YD terminal voltage is 1.5V or less ⑩ 5 seconds or more ① Driving at a speed of 15 km/h or less ② YAW terminal voltage is 1.66V or less, or 3.35V or more ③ 5 seconds or more ① Driving at a speed of 15 km/h or less ② YAW terminal voltage is 0.5V or less or 4.5V ③ 1.5 seconds or more ① Stopped and shift position is P range ② YAW terminal voltage is 2.25V or less, 2.76V or more ③ 5 seconds or more	 ADS & TAC VSC Computer 

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code	Diagnostic items Examination contents ① Diagnosis conditions ② Abnormal condition abnormal period	Inspection area
35	Master cylinder pressure sensor disconnection, short (VCM, PMC) ① Always ② PMC terminal voltage is 0.25V or less VMC terminal voltage is 4.4V or less, or 5.6V or more ③ 5 seconds or more ① Vehicle speed 10km/h or more ② PMC terminal voltage is 4.75V or more ③ 5 seconds or more	Inspection method: Individual parts inspection, power supply voltage inspection, wire harness inspection, connector inspection based on the relationship diagram (see review) (Relationship diagram) Brake Actuator & Hydro Booster VCM PMC brake actuator &hydro booster ABS & TRC & VSC Computer VCM PMC ABS & TRC & VSC Computer Connector D Connector C Connector B Connector A PMC VCM
36	Yaw rate sensor zero point/end correction ① First time when connecting the battery ② When the ignition switch is moved from P range to other than P range within 15 seconds after turning ON	Inspection method: Based on the circuit diagram · Wire harness between ABS & TRC & VSC computer and P range switch
37	P range disconnection and ON sticking R range disconnection ① Vehicle speed 15 km/h or less ② IG1 terminal voltage when ignition switch is ON ③ P range for 5 seconds or more 0.72V or less R range is 2 seconds or more ① Vehicle station 15km/h or less ② IG1 terminal voltage when ignition switch is ON ③ 60 seconds or more 0.72V or more	Inspection method: Individual inspection of each part and power supply voltage inspection based on the relationship diagram · Wire harness inspection · Connector inspection (see review) (Relationship diagram) neutral start switch Neutral start switch IG battery PL RL ABS & TRC & VSC Computer ABS & TAC & VSC Computer Connector D Connector C Connector B Connector A P R

12

JB2953

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code number	Diagnostic items 診 断 content ① Diagnosis conditions ② Abnormal condition ③ Abnormal period	point area
44	Engine speed constant 〔NEO〕 ① Vehicle speed 30km/h or more ② Computer's NEO terminal voltage is OV or 5V (no pulse) ③ 10 seconds or more ① Under TRC control ② Computer NEO terminal voltage is OV or 5V (no pulse) ③ 0.2 seconds or more	Inspection method: Based on the circuit diagram • Engine control computer ~ ABS & TRC & VSC computer wiring harness TCCS ダイアグノーシスコード (Follow TCCS troubleshooting section)
47	Subthrottle position sensor idle switch | Short 〔IDL2〕 ① When the sub-idle switch is ON ② Sub-throttle position sensor VTA terminal voltage 1.5V or more ③ 1 second or more ① Initial check in progress ② When the sub-throttle valve motor is running or When the sub-idle switch never turns on Therefore, both the ON and OFF states of the switch cannot be detected. (3) 1 time	Inspection method: Based on the circuit diagram ・ Wire harness disconnection or short between sub-throttle position sensor and throttle valve motor driver ・ Wire harness between sub-throttle valve position sensor and ABS & TRC & VSC computer ・ Sub-throttle position sensor (see page 251)) ・ ABS & TRC & VSC computer (See page 12144) ・ Throttle valve motor driver (see page 12142) TCCS diagnosis code (Follow TCCS troubleshooting section)
51	Engine control computer malfunction ① Engine speed 500r/min or more ② Check engine ③ 5 seconds or more	Inspection method: TCCS diagnosis code (follow TCCS troubleshooting section)
Always lit	computer system abnormality Abnormal power supply voltage ① Always ② Computer IG terminal voltage is 16~18V	•Battery ・ IC regulator

12

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[salutation]

TC04063

Functional check

注意 • When performing inspection work, the diagnosis code may be memorized, so be sure to perform the diagnosis after completing the inspection work. Erase the code and confirm that a normal code is output.

• When installing or removing the battery, computer, or yaw rate sensor, be sure to read "Overview" - "Precautions during inspection and maintenance" - "VSC" Perform the initial setting of the yaw rate sensor value according to the following.

Lamp & Buzzer Inspection

1 Brake warning lamp, buzzer check

注意 After turning on the ignition switch, perform an inspection after 90 seconds or more have elapsed.

(1) Chock the wheels and start the engine.

(2) When you release the parking brake lever and pedal the brake pedal continuously (full stroke) 15 to 20 times, check that the brake warning lamp lights up and the buzzer sounds.

sub throttle valve motor

1 Sub throttle valve motor inspection

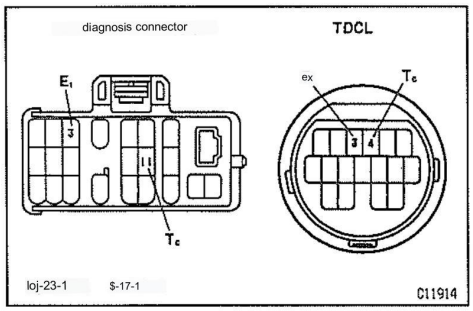
(1) When the shift lever is shifted to P or N range and the ignition switch is turned on, the sub-throttle valve motor operates. Check to see if there is a moving sound.

note Do not press the accelerator pedal.

Brake master cylinder ASSY W/ABS & TRC (power supply function/operation check)

1 Battery voltage check

Reference value 10~14V (when engine is stopped)



2 Power supply system function/ operation check (1) Check that the diagnosis connector and the TcE terminal of TDCL are open.

(2) With the ignition switch OFF, depress the brake pedal at least 40 times to relieve pressure from the power supply system. <Reference> When the pressure in the power supply system is released, the brake pedal pressure becomes heavier. It becomes.

(3) Check that the fluid level in the reservoir is at the MAX position.

(4) Chock the wheels and release the parking brake.

(5) Turn on the ignition switch and check the time it takes for the pump motor to start and stop. Standard time 20~80 seconds

(6) After stopping the pump motor and starting the engine, check that the warning lamp is not lit.

(7) Stop the engine and turn on the ignition switch again. (8) Confirm that the pump motor starts and stops when the brake pedal is pressed 4 or 5 times.

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(9)(7) The time from when the pump motor starts until it stops

Check. Standard

value 2~11 seconds

(10) When you pedal the brake pedal continuously (full stroke), check that the brake warning lamp lights up and the buzzer sounds after 15 to 20 times.

注意 Check after 900 seconds or more after turning on the ignition switch. I do.

Booster function check

Simple inspection

1 Battery voltage check

Standard value 10~14V (when engine is stopped)

2 Booster operation check

(1) With the ignition switch OFF, depress the brake pedal at least 40 times to relieve pressure from the power supply system. When the pressure in the

〈参考〉 power supply system is released, the force applied to the brake pedal becomes heavier. It becomes.

(2) While pressing the brake pedal, turn on the ignition switch and check the change in pedal height.

standard After turning on the ignition switch, the pedal moves a little further.

Gauge usage inspection

1 Battery voltage check

standard 10~14V (when engine is stopped)

2 LSPV gauge and treadle connection

(1) With the ignition switch OFF, depress the brake pedal at least 40 times to relieve pressure from the power supply system. <Reference> When the

pressure in the power supply system is released, the pressure on the brake pedal becomes heavier. It becomes.

12

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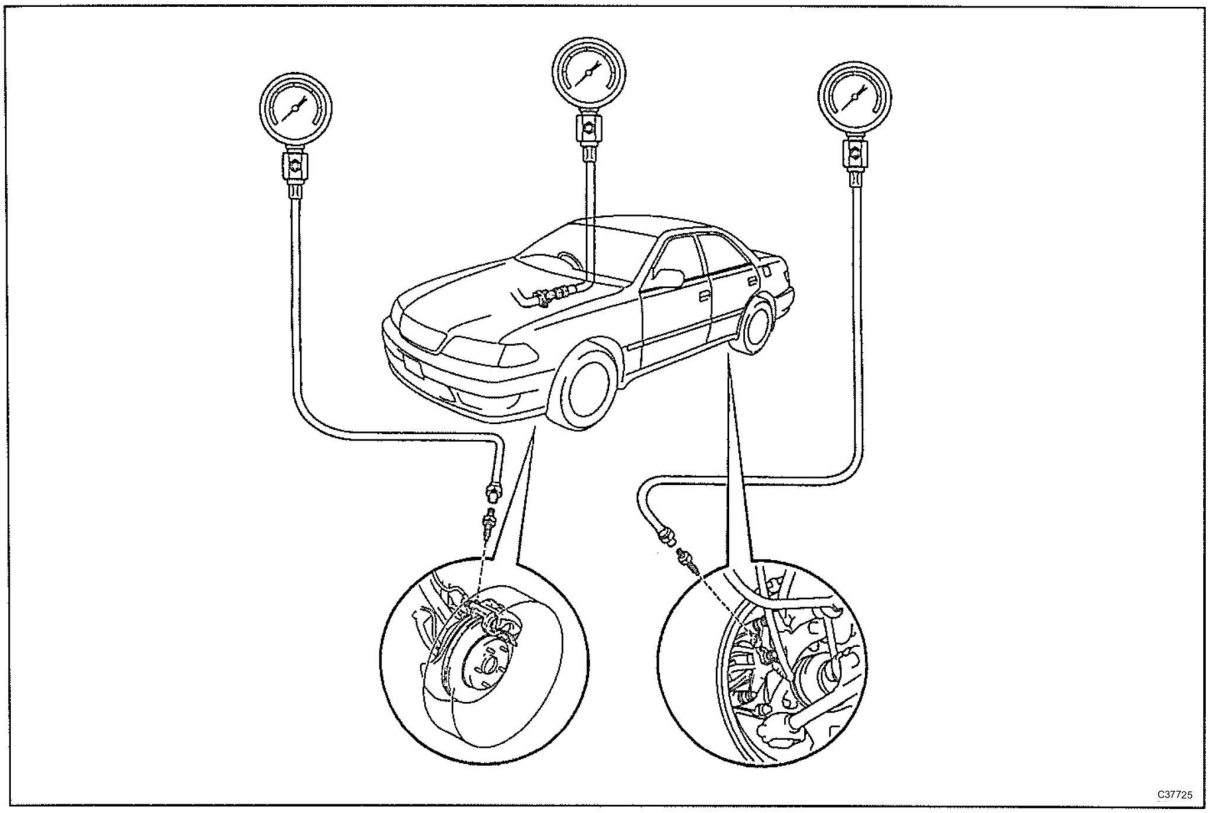
(2) The LSPV first step dynamometer diagram is connected to the top of the diagram, and the first construction

〈参考〉 is completed. Bleeding the air is done in the usual way.



12

3 Double work inspection

(1) 厂厂一乂乀yf OFFT, TV-Yuu 40 times Press the upper pedal 以 down, release the pressure in the power supply system, and check the relationship between pedal force and oil pressure.

Inspection stone.

standards

Pedal force [N{kgf)] Fr oil pressure [MPa {kgf/ckm²}] Rr oil pressure [MPa {kgf/cmkm²}]]		
245 (25)	1.27 {13} or more	0.69 {7} or more
343 (35)	2.11_{21.5} or higher	1.08_{11} or more

(2) 亻 2nd 乂乀于E ON ICL, After the machine has stopped overnight (after 20 to 60 seconds), check the pedal force hydraulic pressure.

Standards

Pedal force [N{kgf)]	Fr oil pressure [MPa {kgf/cni}]	Rr oil pressure [MPa {kgf/cnd}]
49 (5)	1.72.7 (17~27)	1.4~2.4 (14.5~24.5)
98 (10)	4.4~5.4 (45-55)	3.1 4.1 (31.5~41.5)
147 {15}	6.7 7.7 (6878}	4.5-5.4 (45.5~55.5)
196 (20)	9.0~10 (92-102)	5.9~6.9 (60~70)

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Solenoid operation check

Purpose: Check for mechanical failure by forcibly driving the solenoid and motor.

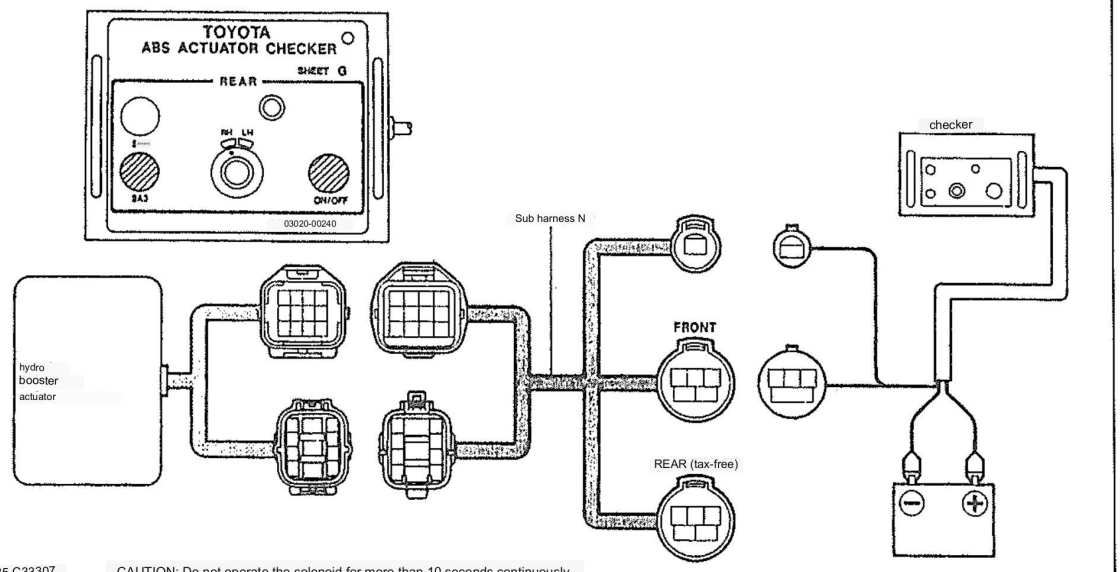
1 Battery voltage check

standard 10~14V (when engine is stopped)

2 ABS actuator checker connection

3 Inspect SA1, A2, SA3 solenoids and front system control solenoids

ABS checker connection diagram



X9485 C33307 CAUTION: Do not operate the solenoid for more than 10 seconds continuously. C37727

12

Inspection items	point method	standard	When you deviate from the standard
Power supply system operation check	(1) Press the brake pedal more than 40 times with the ignition switch OFF.	the pedals become heavier	power Supply system abnormality
Front system control solenoid operation check	(1) Set the select switch to “SA3”, press the “SA1”, “SA2”, and “ON/OFF” switches at the same time, and depress the brake pedal with a constant force (2) ON/OFF switch, “SA2” switch, “ SAI” switch.	Pedal does not fit in SA1, SA2, SA3 The pedal goes in. You can	Poor noid valve sealing Each time the switch is released, SA1, SA2, and SA3 malfunction.
Motor operation check	(3) Turn on the ignition switch	hear the operating sound.	Defective pump motor
Front control solenoid operation check	(4) Set the select switch to “RH”, press the “SA1” switch and press the brake pedal with a certain force, and press the “ON/OFF” switch (5) Release the “SA1” switch (“ON/OFF”) (keep the switch pressed)	Pedal does not go in. the pedals goes in	Holding solenoid valve malfunctions. Pressure solenoid valve malfunctions
	(6) Set the select switch to “LH”, press and hold the “SA2” switch, depress the brake pedal with a certain force, and press the “ON/OFF” switch (7) Release the “SA2” switch (“ON/OFF”) " Keep the switch pressed) (8) “Release the ON/OFF switch and release the brake pedal.	The pedal doesn't fit in the pedal goes in	Holding solenoid valve operates Decompression solenoid valve malfunction

JB3060

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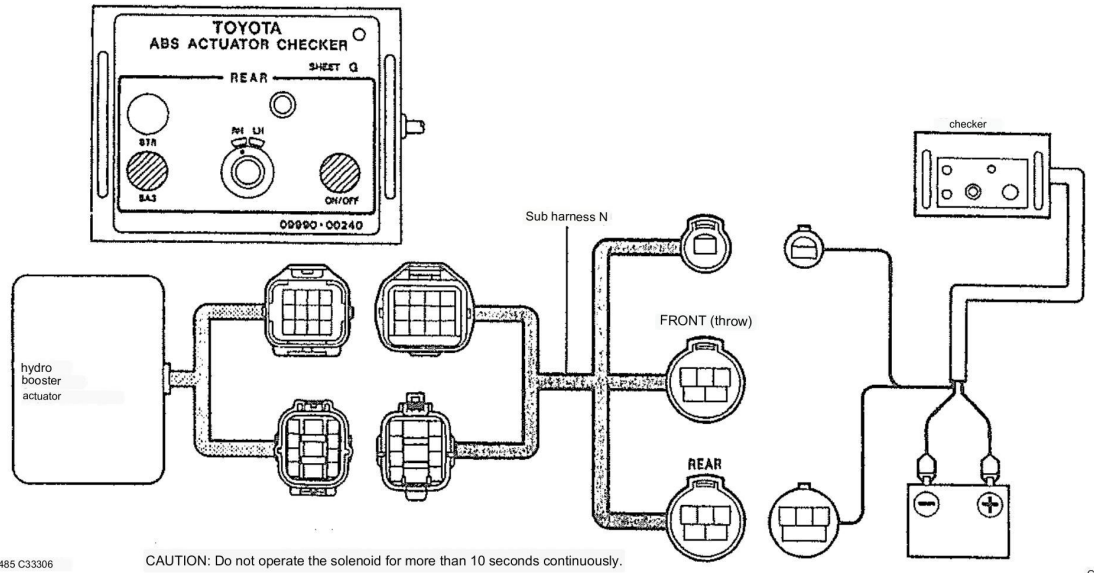
ABS checker connection diagram



Inspection items	Inspection method	standard	When you deviate from the standard
Rear system control solenoid operation check	Set the select switch to RH, LH and perform (1) and (2).	———	———
	(1) While pressing the brake pedal with a constant force, press the "ON/OFF" switch for 2 to 3 seconds.	The pedal doesn't fit in	Holding solenoid valve malfunction
	(2) Release the "ON/OFF" switch	the pedal goes in	Malfunction of pressure reducing solenoid valve
Motor operation check	(3) Lift up the vehicle and start the engine	I can hear the operating sound	Defective pump motor
Rear system control solenoid operation check	(4) Release the parking brake, shift the shift lever to L position, and let the rear wheels spin.	———	———
	(5) Press "SA3" and "STR" switches at the same time	rear wheels stop	"SA3", "STR" switch malfunction
	(6) Release the "STR" switch (keep pressing the "SA3" switch)	Rear wheel spins	"STR" switch malfunction
	(7) Press the "ON/OFF" switch, then release the "SA3" switch, then release the "ON/OFF" switch	———	———

JB3061

4 Rear system control solenoid, STR solenoid inspection

you Clearing the diagnosis code 5 If

disconnect the connector, the diagnosis code will not be memorized.

Therefore, be sure to erase the memory of the diagnosis after completing the inspection.

(See "Troubleshooting" - "Diagnosis Check")

6 Check normal code

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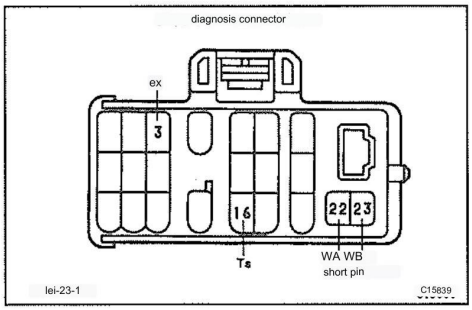
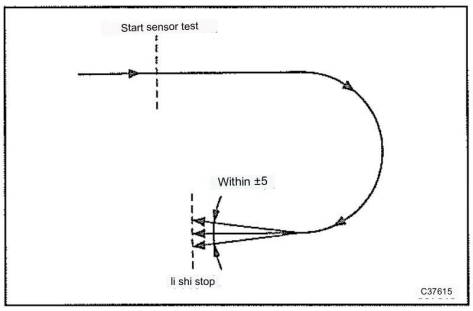




Test mode inspection

1 Battery voltage check standard

value 10~14V (when engine is stopped)

2 Speed sensor function

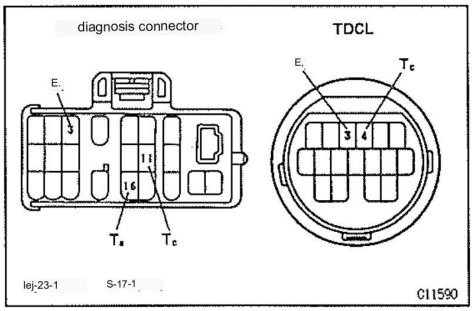
check (anti-lock brake system (ABS) & traction control

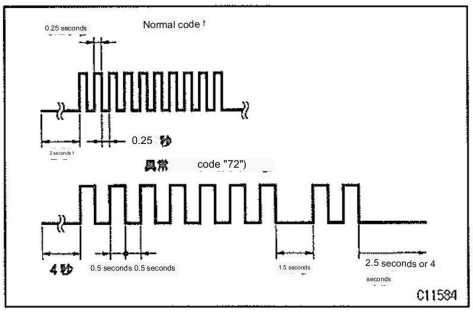
System (TRC)" - see "Functional Check")

3 VSC sensor function check

Inspection items	work	standard	When you deviate from the standard
Yaw rate sensor 0 points	Turn the ignition switch to LON	Buzzer after 1 second rings → stops ringing	If the ringing does not stop, try again. Try again. Or check the yaw rate sensor alone.
Test mode confirmation	start the engine	VSC Warni The engine lamp restarts from the beginning every 0.13 seconds.	
master cylinder zero point voltage check of oil pressure sensor	Release the brake pedal for more than 3 seconds		
Master cylinder output voltage check	Press the brake pedal firmly and then release the pedal.		
Rudder angle — sensor check	After fully locking the steering wheel, go straight ahead	Check the results later in test mode	
Yaw rate sensor output voltage check	Shift to D range and slowly (approximately 5 km/h) and turn with the steering wheel fully locked (steering angle of 180 degrees or more) (either left or right) 180 ± 5 degrees		
	Vehicle stopped	——	——
Confirmation of completion of inspection	Shift to P range	Buzzer sounds for 3 seconds	No sound → Try again

JB3702





4 Test mode code display

(1) Short-circuit CONTENT between the diagnosis connector and the TE terminal of TDCL.

16(Ts) 3(E1) Do not open the terminals.

(2) Read the flashing cycle of the VSC warning lamp.

Technical report
12
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5 Test mode code list

code number	Examination contents [] Computer terminal symbols	How to erase test mode code	Bug content
71	Yaw rate sensor output error (YAW, GYAW, YD)	- IG switch ON L in P range, stop for 3 seconds or more, then turn 180° ±5° in D range and stop. Shift to P range again.	ⓘYaw rate sensor disconnection, short 2 Yaw rate sensor wire harness Disconnection, short circuit ③Yaw rate sensor installation failure ④P range signal line wire harness disconnection or short
72	Steering angle sensor output error (SS1, SS2, SSC)	• Steering the steering wheel until it is fully locked, then return it to the steering angle center (the steering position when traveling straight). vinegar. - Drive for more than 1 second while steering the vehicle more than 90 degrees from the center of the steering angle. (more than 5km/h)	① Rudder angle sensor disconnection, short ② Rudder angle sensor wire harness disconnection, failure short ③ Rudder angle sensor installation
73	Master cylinder pressure sensor output error (VCM, PMC)	• Release the brake pedal for more than 1 second. • With the vehicle stopped, firmly press the brake pedal at 98N {10kgf} or more for more than 1 second. • Release the brake pedal when the vehicle is stopped.	① Master cylinder pressure sensor disconnection, short ② Master cylinder pressure sensor wire harness disconnection, short ③ Stop lamp switch wire harness disconnection, short

JB3713

Troubleshooting by problem phenomenon

1 Troubleshooting by problem phenomenon

12

· See the ABS edition for troubleshooting by malfunction phenomenon related to the ABS warning • lamp.For troubleshooting by malfunction phenomenon related to the TRC OFF lamp and slip indicator lamp, refer to the TRC edition.		
Malfunction phenomenon		Related circuit diagram
Diagnosis details ① Diagnosis conditions ② Abnormal conditions	Inspection area	
Buzzer does not sound when VSC is activated		
· Check the buzzer function, wiring harness (between VSC buzzer and computer), connector coupling failure, or computer unit failure may be the cause.		
When the ignition switch is turned on, the VSC buzzer continues to sound		
· Check the buzzer function, wire harness (between VSC buzzer and computer), poor connection of the connector, or defective computer itself.		

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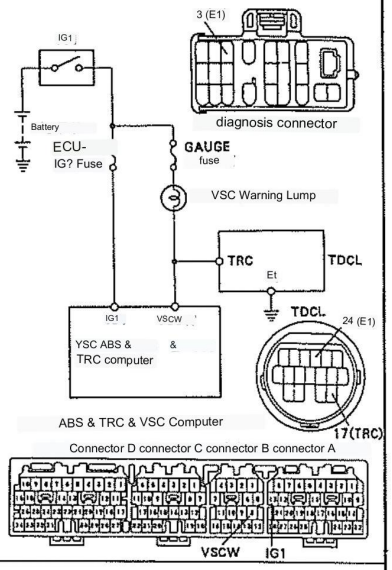
box [Conveyance

Malfunction phenomenon		Related circuit diagram
Diagnosis details ① Diagnosis conditions ② Abnormal conditions	Inspection area	
VSC Warnin Grand Lamp always lights		
① Diagnothesconector and TDCL TCE "Short -circuited between terminals ② VSC Warnin Gramp Rights	· Computer connector defective · Wire harness [fuse (ECU -IG) ~ Computer IG Body] Defective	
① Ignition to remove the connector of the computer after the ignition switch off Switch ON ②@ VSC Warnin Grand Pick Lighting	· Porday shorts of wire harness (between meters and computers meters and diagnostic conectors)	
② 6 VSC Warnin Grand Pamps off	· Computer failure	
VSC Warnin Grand Lamp does not light for 3 seconds after the ignition switch on		
① Change the ignition switch off, connect Remove the tar ② VSCW terminal → E] Short circuit between terminals ⑤ TDCL TRCE "Short circuit between terminals ② VSC Warnin Gramp Light off	· Defective combination meter · Wire harness [between fuses and meters, meters and connectors, between TDCL TRC) disconnected	
② D VSC Warnin Grand Pamps lit	• Computer bad	



VSC does not work (difficult to operate)

Was it a running at about 15km/h or more?
NO. → It is normal because it does not operate at 15km/h or less
YES
Ignition Switch on on about 35km/h or higher for a few seconds.
NO. → It is normal because the rudder angle has not been picked up
Vehicle status confirmation [Is it a distant remodeling (with non -set tires)? }
Yes → Return to the regular condition
NO.
Is the installation status of each sensor a regular installation?
NO → Attach correctly
Remove
the YES battery and retake the yeshele zero
System is normal

VSC activates by normal driving

Did the buzzer sound like "Pippy Pippi"?
Check the diagnostic code
NO.
Buzzer failure check/Buzzer is
NO. → Check the diagnostic cord
YES
normal or VSC is normal, so please check other systems

JB3208

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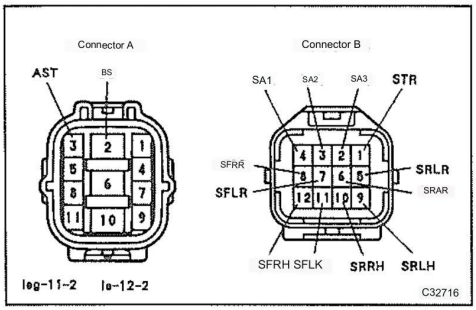

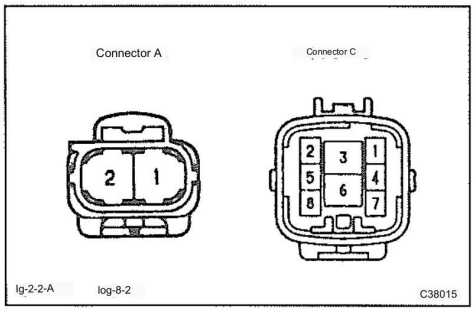

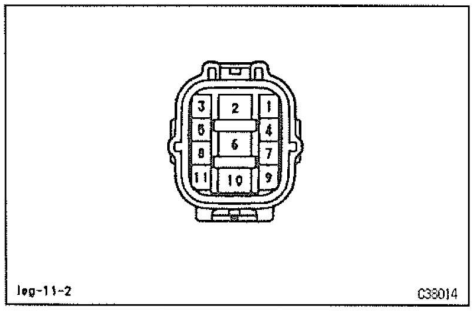

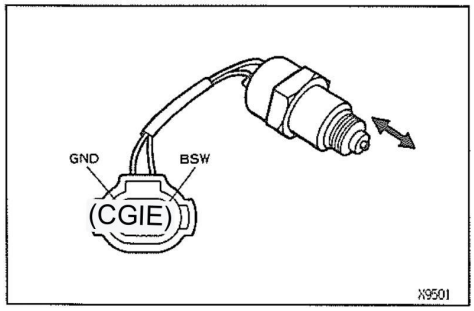

T0045084

Individual inspection

Brake master cylinder ASSY W/ABS & TRC

1 Solenoid inspection

(1) Check continuity and resistance between each terminal.

standard ○ ○ Continuity

A.	B.											resistance
2	3	1	2	3	4	5	6	7	8	9	10	11	12	
OTO														Approximately 33Ω
O	-O													Approximately 3.3Ω
O		O												
O			O											
O				O										Approximately 2.2Ω
O					O									
O						O								
O							O							
O								O						Approximately 5Ω
O									O					
O										O				
O											O			
O												O		
O													O	

JB0262

2 Pump motor inspection

(1) Check continuity between each terminal.

standard ○○Guidance available

A.		C.			Resistance value
1(EM2)	2(BM2)	3(BM1)	4(MTT)	6(EM1)	
O	O	O		O	—
		O	O		Approximately 5Ω (reference value)

JB3215

3 Inspection of differential valve switch system

Differential valve switch system function inspection

(1) With the ignition switch OFF, depress the brake pedal at least 40 times to release pressure from the power supply system.

<Reference> When the pressure in the power supply system is released, the pressure on the brake pedal becomes heavier.

(2) Disconnect the connector.

(3) Check the resistance between terminals 11(BSW)-9(GND).

Standard value When not pressing the brake pedal... 460~560Ω

When you press the brake pedal ••....∞Ω

Differential valve switch unit inspection

(1) Check the resistance between the 1 (GND) 2 (BSW) terminals.

Standard value When not pushing the shaft... 460~560 Ω

When pushing the shaft.....∞Ω

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4 Inspection of oil pressure sensor, pressure switch, and accumulator Inspection is

注意 performed on the vehicle.

Oil pressure gauge installation

(1) With the ignition switch OFF, depress the brake pedal at least 40 times to relieve pressure from the power supply system.

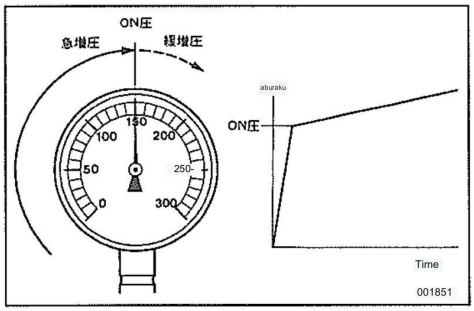
<Win 考> When the pressure in the power supply system is released, the force applied to the brake pedal becomes heavier. It becomes. (2) Remove the actuator cover.

(3) Remove the three bolts and connector, and remove the speed control Remove the actuator.

(4) Remove the bleeder plug from the pump part of the brake master cylinder ASSY W/ABS & TRC, and install an oil pressure gauge (measuring range 0 ~19.61 {0~200} MPa {kgf/cuf} or more).

<Reference> Use the adapter from the LSPV gauge set. (5) Loosen the bleeder plug of the gauge, turn on the ignition switch, turn the pump motor, and bleed the air from the gauge.

Oil pressure sensor inspection



(1) With the ignition switch OFF, depress the brake pedal at least 40 times to relieve pressure from the power supply system. (**) When the in the power supply system is released, the brake pedal pressure becomes heavier. It becomes.

(2) ABS & TRC & VSC While measuring the voltage between the PH E2 terminals of the computer, turn on the ignition switch and check the voltage. Check the relationship between and hydraulic pressure. <Reference> If it is outside the standard, there may be a voltage of 5 to 7V between the VCE2 terminals. and (sensor power supply) Also check the wiring harness between the computer and the sensor.

(3) Slowly depress the brake pedal several times and check the oil pressure (ON pressure) at which the pump motor starts rotating. (Read the oil pressure when the oil pressure changes from rapidly increasing pressure to slowly increasing pressure.)

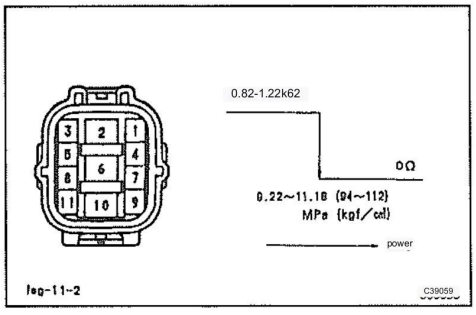
Standard 值 12.94~16.45 {132~168} MPa {kgf/cmi}

(4) Depress the brake pedal several times to turn the pump motor and turn the pump on. Check the oil pressure (OFF pressure) at which the motor stops.

Standard value 14.42~17.92 {147~183} MPa {kgf/cm}

<Reference> When the pump motor stops, the oil pressure becomes 0MPa {kgf/crf}. Ru.

pressure switch



(1) With the ignition switch OFF, depress the brake pedal at least 40 times to relieve pressure from the power supply system. <Reference> When the pressure in the power supply system is released, the pressure on the brake pedal becomes heavier. It becomes.

(2) Disconnect the connector.

(3) While measuring the resistance between the 7 (PL) and 9 (GND) terminals, turn on the ignition switch and check the relationship between resistance and oil pressure.

(4) After inspection, erase the diagnosis code.

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Accumulator inspection

(1) With the ignition switch OFF, press the brake pedal more than 40 times.

Depress the top to release pressure from the power supply system.

<Reference> When the pressure in the power supply system is released, the pressure on the brake pedal

It becomes.

becomes heavier. (2) Turn on the ignition switch and turn on the accumulator pressure.

Inspect. (Check the oil pressure when the oil pressure changes from rapidly increasing pressure to slowly increasing

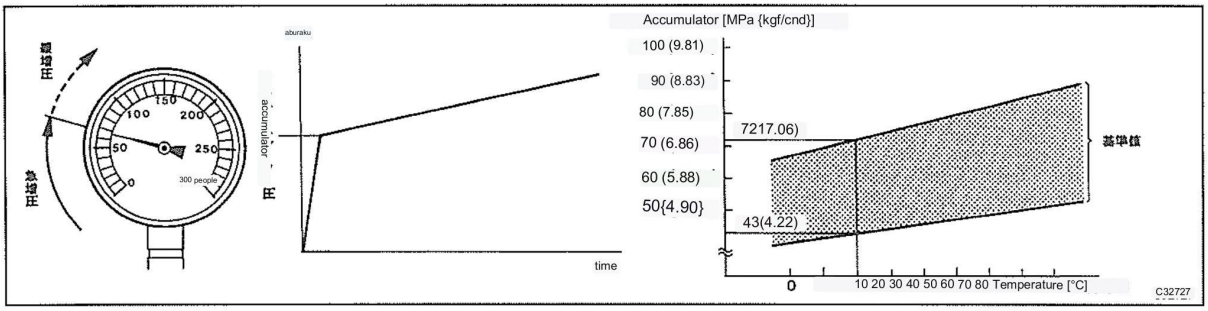
pressure.)

Standards 4.22~7.06 {43~72} MPa {kgf/cm} (at 20℃)

〈参考〉 If the temperature is different, use the diagram below or the following calculation formula to find the reference value.

Ru.

Reference value (at T°C) = Reference value (at 20°C) × (T+273)/293



Oil pressure gauge removal

(1) With the ignition switch OFF, depress the brake pedal at least 40 times to release

pressure from the power supply system. When the pressure in the

〈参考〉 power supply system is released, the force applied to the brake pedal becomes heavier.

It becomes.

(2) Remove the oil pressure gauge and install the bleeder plug.

<reference> Turn on the ignition switch and turn the pump.

Bleed air with some bleeder plugs. (3)

Remove the speed control actuator with three bolts.

and attach the connector.

(4) Attach the actuator cover.

(5) With the ignition switch OFF, depress the brake pedal at least 40 times to

relieve pressure from the power supply system. <Reference>

When the pressure in the power supply system is released, the pressure on the brake pedal becomes

heavier.

(6) Adjust the fluid to the MAX position of the reservoir.

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skid control relay

(See "Anti-lock Brake System (ABS) & Traction Control System

(TRC)", "Individual Inspection (ABS Edition)" - "ABS Relay")

throttle valve motor

(Refer to "2JZ-GE Engine" - "EFI System" - "Single Point Calibration")

Stop lamp switch

(anti-lock brake system (ABS) & traction control

System (TRC)" - "Individual Inspection (ABS Edition)" - "Stop Lamp Switch")

Front speed sensor

(anti-lock brake system (ABS) & traction control

(See "System (TRC)" - "Individual Inspection (ABS)" and "Front Speed Sensor")

rear speed sensor

(Anti-lock Brake System (ABS) & Traction Control

System (TRC)" - "Individual Inspection (ABS Edition)" - "Rear Speed

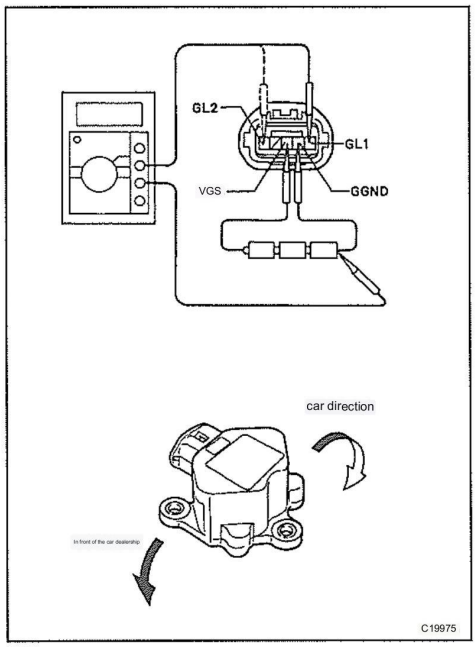
Sensor") Throttle position sensor (main, sub)

(Refer to "2JZ-GE Engine" - "EFI System" - "Individual Inspection")

Combination meter

(see ``Electrical'' - ``Meter & Gauge")

acceleration sensor



1 Output check

(1) Connect three 1.5V dry batteries in series.

(2) Connect the battery ④ to the VGS terminal and the battery ④ to the GGND terminal, and

Apply 4.5V voltage between GGND terminals.

(3) Check the output voltage of GL1 and GL2 terminals.

sensor condition		output voltage
GL1	horizontal state	Approx. 2.3V
	tilt forward	Fluctuations from 0 to approximately 2.3V
	tilt backwards	Fluctuations between approximately 2.3~4.5V
GL2	horizontal condition	Approx. 2.3V
	tilt forward	Fluctuations between approximately 2.3~4.5V
	後 tilt in direction	Fluctuations between 0 and approximately 2.3V

JA4012

Caution

· The horizontal state of the sensor is the state parallel to the mounting surface of the sensor.

Do not apply a voltage higher than 6V between the VGS and GGND terminals.

- When the sensor is tilted a lot, different values may be obtained.
- If you drop the sensor, replace it with a new one.

- Do not store the sensor removed from the vehicle upside down.

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master cylinder oil pressure sensor

1 Master cylinder oil pressure sensor inspection

(1) With the ignition switch OFF, depress the brake pedal at least 40 times to release pressure from the power supply system. <Reference> When the pressure in the power supply system is released, the pressure on the brake pedal becomes heavier. It becomes.

(2) Connect the LSPV gauge to the front disc brake cylinder and bleed the air from the gauge.

〈参考〉 Bleed air in the usual way.

(3) Turn on the ignition switch, press the brake pedal firmly, and check the relationship between the voltage and oil pressure between the ↔PMC E2 terminals of the ABS & TRC & VSC computer.

standards

Front oil pressure [MPa {kgf/cm}]	PMC E2 voltage [V]
0	0.37~0.631
5.88 (60)	1.57~1.83
11.8 (120)	2.77~3.03

<reference> If it is outside the standard value, check that there is a voltage of 5±0.3V between the VCM-E2 terminals (sensor power supply), and also check the wire harness between the computer and sensor and oil leakage around the master cylinder oil pressure sensor.

VSC warning lamp

1 VSC warning lamp check

(1) Turn on the ignition switch. Standard:

The VSC warning lamp lights up for about 3 seconds and then turns off.

12

ABS warning lamp

(Refer to "Anti-lock Brake System (ABS) & Traction Control System (TRC)" - "Individual Inspection (ABS Edition") - "ABS Warning Lamp")

TRC OFF lamp

(Refer to "Anti-lock Brake System (ABS) & Traction Control System (TRC)", "Individual Inspection (TRC Edition)" - "TRC OFF Lamp")

slip indicator light

(Refer to "Anti-lock Brake System (ABS) & Traction Control System (TRC)" - "Individual Inspection (TRC Edition)" - "Slip Indicator Lamp")

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throttle valve motor driver

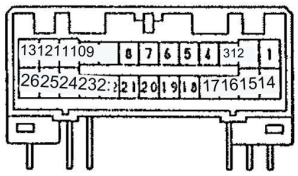
1 Computer inspection

(1) With the computer connector connected, disconnect the voltage between each terminal.

Check pressure and continuity.

Before measurement, check the power supply voltage (10 to 14V when IG is ON) and grounding (5Ω or less between each earth terminal and the body when IG OFF).

Connector A



Vd-26-2-C

connector	ID	Terminal symbol (terminal name)	input/output	item	Measurement condition	basis
A.	1	ACM GND (Stepping motor A 相 Common motor)	output	Voltage	Shift lever P or N range, main throttle valve fully open and IG switch ON	10 ～ 14V
	2	A→GND Stepping motor KA phase motor)	output	Yosho	IG switch ON when shift lever is in P or N range and main throttle valve is fully closed.	1.5V or less ↔ Inverted at 10~14V
	3	IG1 → GND (Ignition スイッチ ン)	入力	Voltage	IG switch ON	10 ～ 14V
	5	BO - GND (B phase switch)	output	Voltage	Shift lever in P or N range, main throttle valve fully closed, IG switch ON	IV or less ↔ Inverted at 5~8V
	7	BO → GND (B phase switch)	output	Densho	Shift lever P or N range, main throttle valve fully closed IG switch ON	1V or less ↔ Inverted at 5~8V
	9	SGND →→ Body Ground (Battery terminal)	入力	Continuity	IG switch OFF	With continuity
	11	BM++ GND (Battery + terminal)	input	Voltage	IG switch ON	10 ～ 14V
	12	B→ GND Stepping motor) \B phase	output	Densho	Shift lever P or N range, main throttle valve fully closed JIG switch ON |	1.5V or less, ↔ inverted at 10~14V
	13	BCM GND Stepping motor AB common motor)	output	Voltage	Shift lever P or N range, main throttle valve fully closed |IG switch ON	10 ～ 14V
	14	A → GND Stepping motor \A 相 motor)	output	Voltage	Shift lever P or N range, main throttle valve fully closed IG switch ON	1.5V or less ↔ Inverted at 10~14V

12

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connector	ID	Terminal princess number (terminal name)	input/output	item	Measuring conditions	basis
A	15	SMSG GND (battery terminal)	input	Continuity	IG switch OFF	With guidance
	17	TDF - GND (warning terminal)	output	Voltage	IG switch ON, after about 1.5 seconds	1V or less 7~11V
	19	AO - GND (A phase switch)	output	電圧	Shift lever P or N range, main throttle valve fully closed IG switch ON	1V or less 5~8V Invert with
	21	AO GND (A phase switch)	output	Russia	Shift lever P or N range, main throttle valve fully closed, IG switch ON	1V or less 5~8V Invert with
	23	CBM → (GND throttle driver カットスイッチ)	output	電圧	Shift lever P or N range, main throttle valve fully closed, IG switch ON	6 ～ 8.5V
	24	PGND- Body Ground (Battery terminal)	input	Continuity	IG switch OFF	With continuity
	25	PGND → Body Earth (battery terminal)	input	導 through	IG switch OFF	With guidance
	26	B→ (GND Stepping motor) B相	output	Densho	Shift lever P or N range, main throttle valve fully closed: 1.5V or less 10~14V IG switch ON	Invert with

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ABS & TRC & VSC Computer

1 computer inspection

(1) Check the battery voltage.

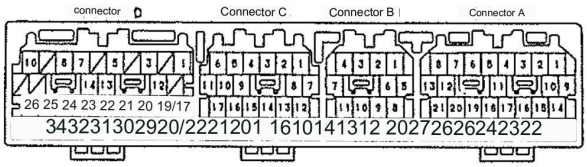
Standard value 10~14V (when engine is stopped)

(2) With the computer connector connected, disconnect the voltage between each terminal. Check pressure and continuity.

Power supply check (10~14V at IG NO) and ground check before measurement

(When IG OFF, connect each ground terminal to the body with a resistance of 5Ω or less.) (3) Using an oscilloscope, check that pulses are generated between each terminal. Confirm that

<reference>
- The * mark in the reference value column shows the oscilloscope waveform.
- The oscilloscope waveforms shown are for reference only and may include noise, chatter, etc. Ring waveforms etc. are omitted.



d-100-2

connector	ID	Terminal princess number (terminal name)	input/output	Item	Measuring conditions	standard
A		SFRR→ GND 1 Front RH pressure reduction solenoid output	出力	Voltage	IG switch ON, after about 1.5 seconds	10～14V *1
		NEO- GND 2 / Engine speed Relation No. 8 input	input	Oscilloscope	At idle rotation	waveform 2 *
	3	SFRH GND / Front RH (holding solenoid output)	output	Voltage	IG switch ON, after about 1.5 seconds	10～14V *1
	4	SR → GND / Solenoid relay relay)	出力	Voltage	IG switch ON, after about 1.5 seconds	8.3V or more *1
	5	CCS → GND Cruise cancel (D range) output	output	Densho	IG switch ON, shift lever D range	6～14V
					IG switch ON, shift lever other than D range	1.5V or less
	6	MR1 → GND Hydro booster motor brester output)	output	電圧	IG switch ON, pump motor rotating	10～14V
					IG switch ON, pump motor stopped	1V or less
	7	EXO GND / ABS VSC Control signal output	output	Voltage	IG switch ON, after about 1.5 seconds	10～14V
	8	INIT → GND Tire pressure monitor initialization switch input	output	Voltage	IG switch OFF→ON	2V or less for about 3 seconds then 10~14V

*1 No inspection is required when the ABS, TRC, or VSC warning lights up (in the event of a failure). (The C17 terminal is 2V or less because C21 terminal is fault detection it is a warning output, so it is 1V or less, and the other terminals are OV because the solenoid relay is turned off by the fail-safe function.)

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connector	ID	Terminal princess number (terminal name)	input/output	Item	Measurement condition	基　準
A.	9	STP →→ GND (Stop lamp スイッチ入力)	input	Densho	IG switch ON, when brake pedal is depressed	8 ～ 14V
					IG switch ON, brake pedal released	1.5V or less
	GND 10	SSIO → Steering sensor (SS output sensor)	output	Voltage	Rotate the steering wheel slowly when the engine is idling	Repeat 1V or less and 4V or more
	12	WTIR GND (Tire pressure warning & indicator lamp 8 outputs)	output	Voltage	Tire pressure monitor initial switch OFF IG switch ON, after approximately 1.5 seconds	10 ～ 14V
	13	IG1 ↔ GND (IG1 電流)	input	Voltage	IG switch ON	10 ～ 14V
	14	SRLH GND (Rear LH 保持 solenoid output)	output	Voltage	IG switch ON, after about 1.5 seconds	10 ～ 14V ＊1
	15	GND3+ Bow Earth (GND)	input	guidance	IG switch OFF	With guidance
	16	R- GND (Solenoid relay GND)	input	導通	IG switch OFF	With continuity
	Meter use Human	SP1 → GND 17 signal output	Output Oscilloscope Running at approximately 30km/h			waveform 3 ※
	18 Hydro Booster	R1 ↔ GND (モーターリレー 1GND)	input	Continuity	IG switch OFF	導通 can be
	19	CBM →→ GND Step (motor power supply Cut request signal output)	output	Densho	IG switch ON when shift lever P or N range, main throttle valve fully closed	6 ～ 8,5V
	20	BO GND (Step motor B phase output signal output No. 7 output)	output	Densho	Shift lever P or N range, main throttle valve IG switch ON when fully closed	Inverted at 5 8V below 1V
	21	AO+ GND (Step motor KA output request name output)	output	Voltage	Shift lever P or N range, main throttle valve IG switch ON when fully closed	Inverted at 5~8V below 1V
	22	SRLR GND (Rear LH Solenoid output)	output	Voltage	IG switch ON, after about 1.5 seconds	10 ～ 14V ＊1
	23 Steering sensor)	SS20 ↔ GND (ASS2 output	output	Voltage	When the engine is idling, turn the steering wheel slowly	Repeat 1V or less and 4V or more
	24	GND4 ↔ Body Earth (GND)	input	導	IG switch OFF	導通 can be
	25 Subthrottle eye	IDL2 → GND idol) Switch input: IG	input	Voltage	Shift lever P or N range, main throttle valve switch ON when fully	4.5V or more → 1V or less closed → 4.5V

or more *1 No inspection required when ABS, TRC VSC warning is lit (failure). (The C17 terminal is 2V or less for warning output, the C21 terminal is 1V or less for failure detection, and the other terminals are OV because the solenoid relay is turned off by the fail-safe function.)

12

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connector	端子番号	Terminal symbol (terminal name)	input/output	item	Measuring conditions	standard
A.	26	TDF++ GND Throttle Driver(Sface)	input	Voltage	IG switch ON, after about 1.5 seconds	1V ↔ 7 ~ 10V ＊2
	27	BO - GND Step motor phase output Person- required number output/ daily output)	output	Densho	IG switch ON when shift lever is in P or N range and main throttle valve is fully closed.	1V or less 5~8V Invert with:
		AO-GND 28 Step motor A phase output Person request signal output	output	Voltage	Shift lever in P or N range, IG switch ON when main throttle valve is fully closed.	Inverted at 5~8V below 1V:
B.	1	1G2 → GND (IG2 power supply)	input	Voltage	IG switch ON	10 ~ 14V
		IND →→ GND 2 Slip indicator Halamp output	output	Yosho	IG switch ON, slip indicator lit	1V or less
					IG switch ON, slip indicator OFF	10 ~ 14V
	3	BZ ← GND (Brake warning VSC Middle buzzer output	output	電圧	IG switch ON, buzzer sounds	1.5V or less
					IG switch ON, buzzer not sounding	10 ~ 14V
	4	MR2+ (GND Hydro booster motor relay 2 output	output	Densho	IG switch ON, pump motor rotating	10 ~ 14V
					IG switch ON, pump motor stopped	Below AV
	5	BAT++ GND Human (ダイアグ配線 electricity 源)	input	Voltage	IG switch OFF	10 ~ 14V
	6	WT →→ GND (TRC OFF indicator lamp output)	output	Kansho	IG switch ON TRC OFF When lamp is lit	1V or less
					IG switch ON, TRC OFF When lamp is off	10 ~ 14V
	7	R2- GND Hydropresta GND) Hamotor Relay 2GND)	input	Continuity	IG switch OFF	With continuity
	8	VSCW GND (VSC warning) Trump output	output	Voltage	IG switch ON - OFF	2V or less for about 3 seconds then 10~14V
	9	GSS (GND G Sensor real GND / Surshield)	input	Junior pass	IG switch OFF	With guidance
	10	VGS GND (G sensor power output)	output	Voltage	IG switch ON	4.5 ~ 5.5V
	11	GL1 ↔ GND (G sensor (1) input)	input	Voltage	IG switch ON (when stopped)	0.5 ~ 4.5V
	12	SSC++ GND (SSC Skang Sensor)	入力	Voltage	Rotate the steering wheel slowly when the engine is idling	1.2 ~ 2.5V ↔ 4 ~ 5.5V
	13	SS2 GND Steering sensor (SS2 input sensor)	input	Voltage	Rotate the steering wheel slowly when the engine is idling	1.2 ~ 2.5V ↔ 4 ~ 5.5V

*1 Inspection is not required when the ABS, TRC VSC warning is lit (at the time of failure). (The C17 terminal is 2V or less because it is a warning output, and the C21 terminal is 1V or less because it detects a failure.The other terminals are OV because the solenoid relay is turned OFF by the fail-safe function.)

*2 Normally, 1V or less with 4ms synchronization 7 Repeat ~11V.

12

Congratulations times

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connector	ID	Terminal princess number (terminal name)	input/output	item	Measuring conditions	basis
B.	14	SS1 → GND (Steering sensor SS1 input)	input	Voltage	Rotate the steering wheel slowly when the engine is idling	Repeat 1V or less and 4V or more
	15	GGND Body → Earth (G sensor GND)	input	導road	IG switch OFF	With guidance
	16	GL2++ GND (G sensor (2) input)	input	Voltage	IG switch ON (when stopped)	0.5 ～ 4.5V
C.	1	RL - GND (Rear LH Wheel speed *Sensor(-) Input)	input	Continuity	IG switch OFF	With continuity
	2	RR+ → GND (rear RH wheel speed sensor (+) input)	Input oscilloscope runs at approximately 30km/h			waveform 1 ※
	3	RSS ↔ GND (Engine ECU [Shield GND))	input	guidance	IG switch OFF	With guidance
	4	TRA++ GND (Engine ECU ECU)	output	Voltage IG switch ON, after about 1.5 seconds		Approx. 2.2V 3
	5	EFI+ GND (Engine ECU communication line (+) input)	input	lead 適	At idle rotation	Approx. 2.5V *Four
	6	TC GND (diagnosis start input)	入力	canned food	IG switch ON, diagnosis connector TcE1 | Short circuit between terminals	1V or less*
					IG switch ON, diagnosis connector TcE1 | Terminals open	10 ～ 14V
	7	RL+ GND (Rear LH chapter wheel speed \Sensor (+) input)	input	Oscilloscope	Runs at approximately 30km/h	waveform 1 ※
	8	RR-GND (rear 車輪速 AH sensor (1) inlet)	input	Continuity IG switch OFF		With continuity
	9	EF1-GND (Engine ECU communication line (1) input 1)	input	Voltage	At idle rotation	Approx. 2.5V 4
	10	TS GND (sensor check Personnel assistance input check)	input	Kansho	IG switch ON, diagnosis connector Ts E1 (Short distance between terminals 絡	1V or less
					IG switch ON Diagnosis connector TE 1 terminal open	10 ～ 14V
	11	PL++ GND (Hydro Booster\ 抵圧スイッチ入力)	input	Voltage	With the IG switch OFF, press the brake pedal more than 40 times and then turn the IG switch ON.	5~7V→1V or less
	12	YAW - (yaw rate sensor GND rate sensor) 入力	input	Voltage	IG switch ON, vehicle stopped and not shaking	2~3V
	13	GYAW → GND (Yaw rate sensor/ GND input force sensor)	input	Continuity	IG switch OFF	With light title

*1 Inspection is not required when ABS, TRC VSC warning is lit (failure). (The C17 terminal is 2V or less because it is a warning output, the C21 terminal is 1V or less because it detects a failure, and the other terminals are OV because the solenoid relay is turned OFF by the fail-safe function.) *3 Under normal conditions, the output voltage is OV at a cycle of 4 to 8ms. 1V or less Repeat 4~5V.

*4 During normal operation, a 2ms serial signal pulse is generated at a 4ms cycle.

12

[steamed noodles]

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connector	ID	Terminal symbol (terminal name)	input/output	Item	Measuring conditions	standard
C	14	CSW GND TRC cut switch)	input	Continuity	IG switch ON, TRC OFF switch press and hold	There is a guide
					Do not press IG switch ON, TRC OFF switch	No continuity
	15	R→ GND Neutral star switch (R) input	input	電圧	IG switch ON, shift lever R range	8 ~ 14V
					IG switch ON, shift lever other than R range	1.5V or less
	16	FRO+ GND Front BH Eight wheel speed signal output	output	Oscilloscope	running at approximately 30km/h	waveform 3 ※
	17	WA - GND ABS warning YD→GND	output	Voltage	IG switch OFF→ON	2V or less for about 3 seconds, then 10~14V *1
	18	Yaw rate sensor Diagnosis input sensor)	input	Voltage	IG switch ON	1.5V ~ 3V
	19	YSS GND (Yaw rate sensor shield GND)	input	Continuity	IG switch OFF	With continuity
	20	FLO → GND Front LH Wheel speed signal output	output	Oscilloscope	Runs at approximately 30km/h	waveform 3 ※
	21	D/G → GND (diagnostic output)	output	Oscilloscope	IG switch ON Diagnosis connector or TDCL TcE, short circuit between terminals	Diagnosis code output
				Den-O	IG switch ON Diagnosis connector or TE of TDCL, open between terminals	10 ~ 14V ＊1
	22	BRL → GND (Brake war lamp output warning)	output	Voltage	IG switch ON, after about 3 seconds	10 ~ 14V ＊1
D	1	SA1 ↔ GND (Front RH ABS switching solenoid output	output	Voltage	IG switch ON, after about 1.5 seconds	10 ~ 14V ＊1
	3	SA3 → GND Rear ABS switching solenoid output	output	Voltage	IG switch ON, after about 1.5 seconds	10 ~ 14V ＊1
	5	STR+ GND [VSC switching solenoid output)	output	Voltage	IG switch ON, after about 1.5 seconds	10 ~ 14V *1
	7	AST GND (Solenoid Relay Hatest Input (Curry)	input	Voltage	After about 1.5 seconds after turning on the IG switch	10 ~ 14V *1
	8	SFLH GND (Front LH Special Solenoid Output)	output	Voltage	IG switch ON, after about 1.5 seconds	10 ~ 14V ＊1
	10	SFLR GND (Front LH pressure solenoid output)	output	Voltage	After about 1.5 seconds after turning on the IG switch	10 ~ 14V **1
	12	P+ (GND Neutral start スイッチ(P)入力	input	Densho	IG switch ON, shift lever P range	8 ~ 14V
					IG switch ON, shift lever other than P range	1.5V or less

＊1 Inspection is not required when the ABS, TRC, or VSC warning is lit (at the time of failure). (The C17 terminal is 2V or less because it is a warning output, the C21 is failure detection terminal is 1V or less because of this, and the other terminals are OV because the solenoid relay is turned OFF by the failsafe function.) *3 Under normal conditions, the voltage is 1V or less with a cycle of 4 to 8mS. Repeat 4~5V.

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connector	Terminal number	Terminal symbol (terminal name)	input/output	item	Measuring conditions	standard
D.	13	BSW → GND (Hydro Booster Switch input)	入力	Densho	40 or more brake pedals with IG switch OFF IG switch ON while stepping on the stepping brake	10 ~ 14V 5 ~ 7V
	14	MTT GND (Pump Motor Relay Hertest input Lou)	input	Voltage	IG switch ON, pump motor rotation	BV or more
					IG switch ON, pump motor stopped	1.5V or more
	17	SA2+ GND (Front Shift ABS Replacement Solenoid Output No	output	Voltage	IG switch ON, after about 1.5 seconds	10 ~ 14V *1
	19	PH GND (Hydro Booster Pressure Sensor input)	入力	導Sho	Pump motor rotating when the vehicle is stopped	Raise between 3 and 5V
					Pump motor is stopped when the vehicle stops	3 ~ 5V
	20	VC → GND ("ACC Pressure Sensor Kano	output	Voltage	IG switch ON	4.5V ~ 5.5V
	21	PMC ++ GND (Master Cylinder 8 -pressure sensor input)	input	Voltage	IG switch ON	1V or less
	22	GND2 → Body Earth (GND)	input	導road	IG switch OFF	There is a guide
	23	FL-GND / Front LH Table (Sensor (Road))	input	導通	IG switch OFF	導通 can be
	24	FR+ → GND Front RH wheel) Sensor (+) input	input	Oscilloscope	Riding at about 30km/h	waveform 1 ※
	25	GND1 ↔ GND (GND)	input	Conduct IG Switch ON		With continuity
	26	SRRH → GND rear (retention output) Hasolenoid output No	output	Voltage	IG switch ON, after about 1.5 seconds	10 ~ 14V *1
	28	E2 → GND ("ACC Pressure Sen GND)	入力	Conductor IG switch OFF		導通 can be
	29	FSS GND (pressure sensor shield GND)	input	導通	IG switch OFF	導 There is a road
	30	VCM → GND (Master Cylinder 8 -pressure sensor power supply output.	output	Voltage IG switch ON		4.5V ~ 5.5V
	31	FL+ GND ("Front LH wheel speed sensor (+) entry)	Input oscilloscope runs at approximately 30km/h			waveform 1 ※
	32	FR -GND (Front) Input	input	導通	IG switch OFF	With guidance
	34	SRRR ↔ GND rear output) Solenoid output no	Output voltage IG switch ON, about 1.5 seconds			10 ~ 14V *1

*1 ABS, TRC VSC Warning No inspection is required when lighting (failure). (Because the C17 terminal is warning output, the C21 terminal is 2V or less, so the C21 terminal is 1V or less, and the other terminals are OV because SolenoDrille is turned off by the fail -safe function.) detection

12

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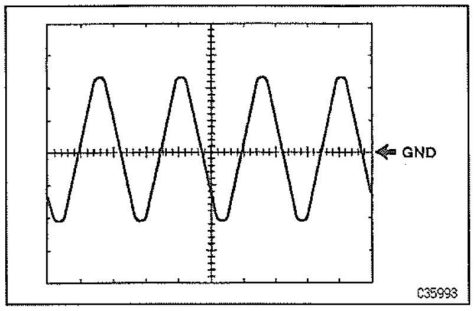


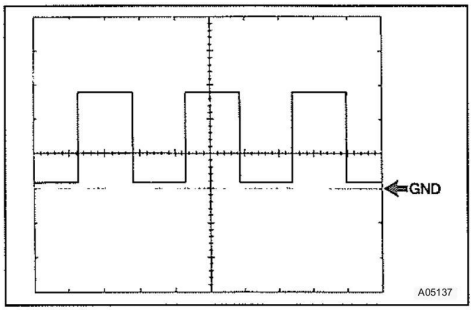
(reference> Saiguchiヌロー¬waveform

waveform 1

Instrument set 1V/DIV, 2ms/DIV

Measurement condition Flying at approximately 30km/h

注意 As the vehicle speed (wheel rotation speed) increases and the cycle period becomes shorter, the amplitude of the output voltage increases.

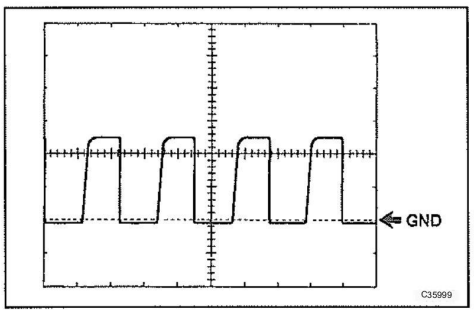


waveform 2

instrument set 5 V/DIV, 2 ms/DIV

Measurement condition . At idle rotation

注意 As the engine speed increases, the pulse period becomes shorter.



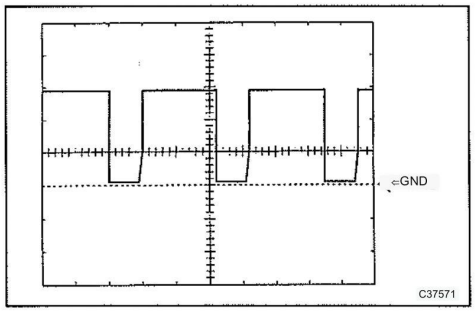
waveform 3

instrument set 5 V/DIV, 2 ms/DIV

Measuring conditions Vehicle traveling at approximately 30km/h

注意 Vehicle speed (wheel rotation speed) increase cycle short, left stone.

12



waveform 4

Instrument set 5V/DIV,1ms/DIV

Measurement conditions IG ヌイyf ON

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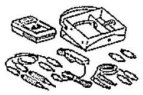
T0049065

Tire pressure warning system

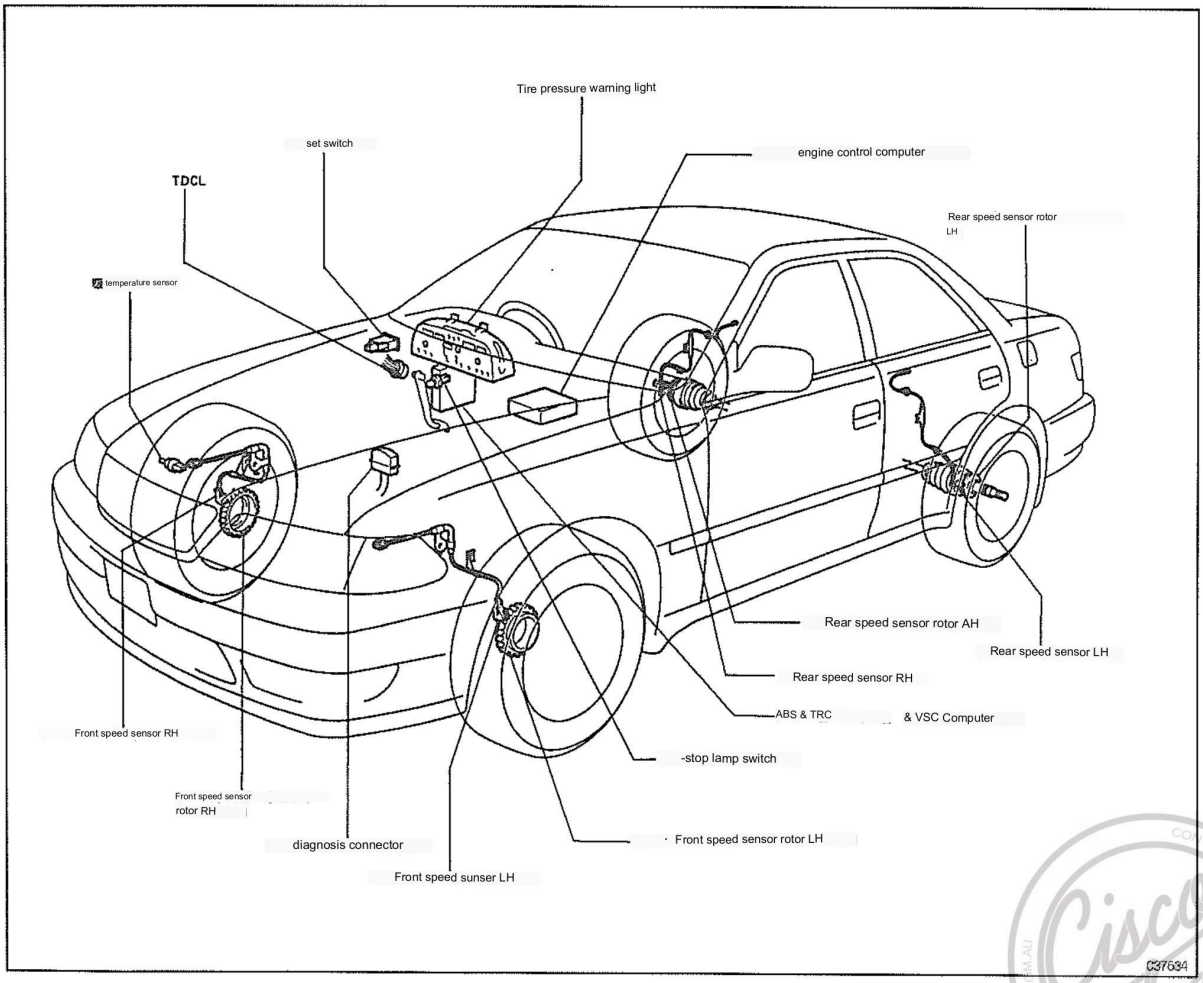
supplies

soup bowl

	09082-00012	toyota electrical tester	For computer and sensor inspection
	(09083-00060)	mini test lead	For computer and sensor inspection
	09843-18020	Diagnosis check wire	For diagnosis code inspection

T0049066

Parts layout diagram



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circuit diagram

("Hydro Booster System & VSC (Vehicle Stability Control)"
- See "Troubleshooting")

T0049058

troubleshooting

Troubleshooting by problem phenomenon

Malfunction phenomenon		Advice in case of successful completion
1. Immediately after turning on the evening switch, the light does not turn on for 3 seconds	From system check (1)	———
2. Constantly lit immediately after turning on the ignition switch	From (2) of system inspection	
3. I pressed the initialization switch, but it does not blink.	From (3) of system inspection	
4. Warning lamp lights up → goes off even if air pressure is not refilled	system inspection	Replenishing the standard pressure The air pressure may have increased due to temperature and exceeded the detection level, causing the light to turn off.
5. Warning lamp lights up → Air pressure is at standard level was	system inspection	① Check if the tire is a standard size. → If the tire is a non-standard size, There is a possibility of malfunction. ② The initial setting value may be high, so adjust the air pressure to the standard value and press the initial switch (until it flashes 3 times). Drive at 30 to 80 km/h for more than 15 minutes and the light does not light up. make sure that
6. No alarm even though air pressure is low	system inspection	① Check if the tire is a standard size. If → the tire is a non-standard size, May malfunction ② Since the initial setting value is considered to be low, Adjust the air pressure to the standard value, press the initial switch (until it flashes 3 times), drive at 30 to 80 km/h for at least 15 minutes, and confirm that the light does not light up.
7. Warning lamp turned on → turned off by turning ignition switch OFF → ON	Measure the air pressure and find that it is below the standard value No → Go to 5 Yes → Adjust to the system normal standard pressure	When the air pressure is not extremely low, The light turns off when the switch is turned OFF→ON. (Detected by re-running)
8. Warning lamp lights up → Refilled but does not turn off	After 2 minutes of driving (over 30km/h) after refilling Lamp turned off → normal Does not turn off → Go to 5	———

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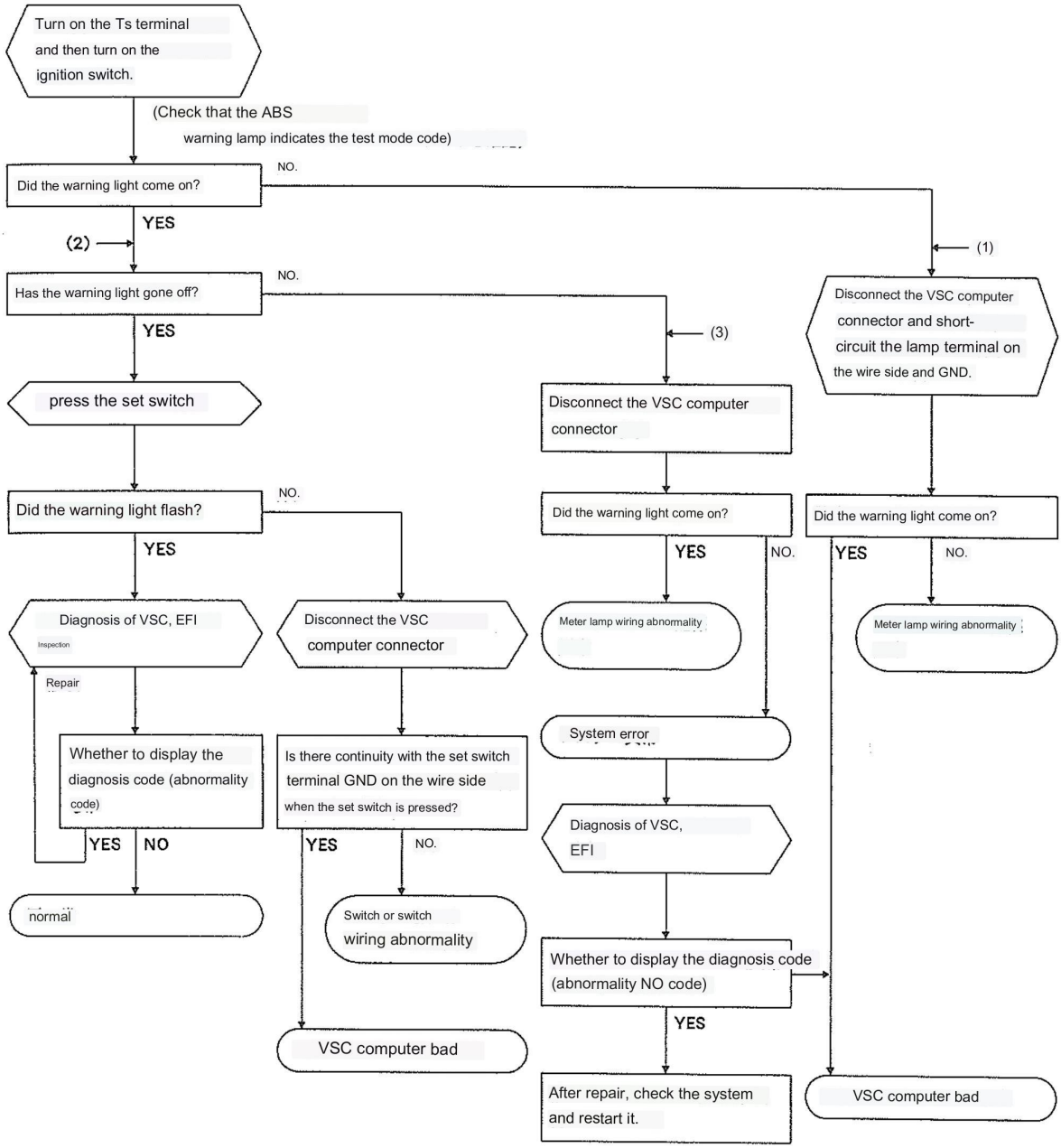

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TOC49067

Functional check

Tire pressure warning lamp check

1 Tire pressure warning lamp check

(1) Turn on the ignition switch.

standard The warning lamp lights up for about 3 seconds and then turns off.

2 Speed sensor function check

(Anti-lock Brake System (ABS) & Traction Control

System (TRC)" - "Speed sensor test mode")

3 Set switch inspection

(1) Short-circuit between the 16(Ts) and 3(E1) terminals of the diagnosis connector.

Ru.

(2) Turn on the ignition switch.

(3) Check that the ABS warning lamp is in test mode.

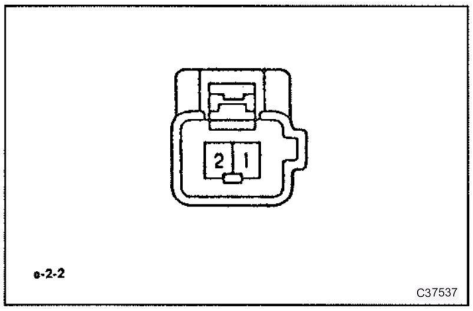
admit.

(4) Turn on the set switch.

standard The warning lamp flashes (3 times) and then turns off.

4 Intake temperature sensor check

(Refer to "1JZ-GE 2JZ-GE Engine" - "EF1 System" - "Intake Air Temperature Sensor")



e-2-2

TOC49068

Individual inspection

set switch

1 Continuity check

(1) Remove the set switch and check continuity between each terminal (1 (E)) 2 (INT)

Check.

standard If the switch is not pressed, ••••• - ••••••No continuity

When the switch is pressed••••••••••••Continuity exists

stop lamp switch

(Refer to "Anti-lock Brake System (ABS) & Traction Control System

(TRC)" - "Individual Inspection (ABS Edition)" and "Stop Lamp Switch")

Tire pressure warning computer

(see "Hydro Booster System & VSC (Vehicle Stability Control)" -

"Individual Inspection" - "ABS& TRC & VSC Computer")

12

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13 Steering

"Precautions for vehicles equipped with SRS airbags"

This section contains maintenance tasks that affect the SRS airbag. For applicable maintenance work, please refer to the table of contents and the title in the main text.

There is a mark on the front, so please read the precautions for SRS airbags in this manual before working to ensure proper operation.

★Basic inspection, adjustment/ ····· 13-2
★Prepared items ····· 13 2
Basic inspection ····· 13-3
★Functional inspection ····· 13-3
★ Stationary steering torque check ····· 13-3
Hydraulic inspection ····· 13-4
Air ····· 13-7
bleed ★Power steering gear ····· 13-8
Preparation ····· 13-8
items ★Power steering gear ····· 13-11
★Delivery configuration diagram ····· 13-11
Exploded configuration diagram ····· 13- 13
cross section ····· 13 - 15
☆Power steering gear
Points to note during removal work... 13-18
Power steering gear ASSY disassembly ····· 13-19
Steering gear component inspection/replacement...
13-21 Steering gear assembly ····· 13 - 24
power steering
electrical control
(New PPS) ··· 13-31
Preparation ····· items 13 - 31
Parts layout diagram ····· 13-32
troubleshooting ····· 13-33
How to proceed with troubleshooting ····· 13-33
Unit inspection... ····· 13 - 36
Steering gear solenoid valve ····· 13-36
Speed sensor ····· 13-36
36 Power steering computer ····· 13-
vane pump ····· 13-37
Preparation ····· items
Vane pump (vehicles equipped with 1G-FE) ····· 13-37 13- 39
De-emission ····· configuration diagram
13-39 Points to note when installing and removing vane pump ····· ASSY 13-39
Exploded configuration ····· diagram 13-40
Cross section ····· 13-41
Vane pump ASSY points to note when disassembling ····· 13-42
Vane pump ASSY component inspection and replacement ····· 13-42
Vane pump ASSY Precautions for assembly work ····· 13-44
Vane pump (1JZ-GE, 1JZ-GTE,
2JZ-GE equipped vehicle) ··· 13- 46
Pipe configuration ····· diagram 13-46
Points to note when installing and removing vane pump ASSY ····· 13- 47
Exploded configuration diagram ····· 13-48
cross section ····· 13-49
Points to note when disassembling vane pump ASSY ····· 13-50
Vane pump ASSY component inspection and replacement ····· 13-50
Vane pump ASSY Precautions for assembly work ····· 13-52
Vane pump (vehicles equipped with 2L- ····· TE) 13-54
Configuration diagram ····· 13-54
Points to note when installing and removing vane pump ASSY ····· 13-55
Exploded configuration ····· diagram 13-56
backface ····· 13-57
Points to note when disassembling vane pump ASSY ····· 13-58
Vane pump ASSY component inspection and replacement ····· 13-58
Vane pump ASSY Precautions for assembly work ····· 13-60
★Steering column ····· 13-62
Prepared items. ····· 13-62
★Steering column ASSY ····· 13-64
★Decomposition diagram ····· 13-64
Exploded configuration diagram ····· 13-65
cross section ····· 13-69
★Notes on steering column ASSY installation/removal work... 13-73
Points to note on steering column ASSY disassembly work ··· 13-73
Inspection and replacement of steering column components 13 74
Steering column ASSY
Points to note during assembly work... 13-75

13

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★ Basic inspection,adjustment

☆Prepared items

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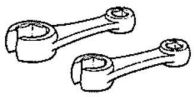
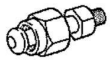
	09631-22020	power steering hose nut wrench set	For disconnecting and connecting pressure feed tubes (with 1G-FE, 2L-TE engines) car)

tool

Spanner 22×24mm 10403		For fixing pressure port union

instrument

	PSG-6TB PSG-151	Power steering pressure gauge set (handled by Banzai Co., Ltd. (handled by Iyasaka Co., Ltd.)	For aburakui point
	(PSG-FJS) (PSG-A10)	attachment Treated as Banzai Co., Ltd. Treated as Iyasaka Co., Ltd.	For hydraulic inspection (1G-FE, 2L~TE car with engine)
	(PSG-FJL) (PSG-A20)	attachment Treated as Banzai Co., Ltd. Treated as Iyasaka Co., Ltd.	For hydraulic inspection (planned vehicle)
	(PSG-2ST) (PSG-A31)	attachment Treated as Banzai Co., Ltd. Treated as Iyasaka Co., Ltd.	For hydraulic inspection (1JZ-GE, 1JZ-GTE, 2JZ-GE engine equipped vehicle)
temperature gauge 21701			For checking oil temperature

Oils and fats Others

Toyota genuine power steering fluid 30803	For replenishment

13

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TD040106

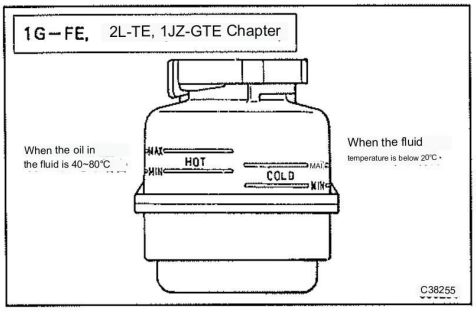
Basic inspection

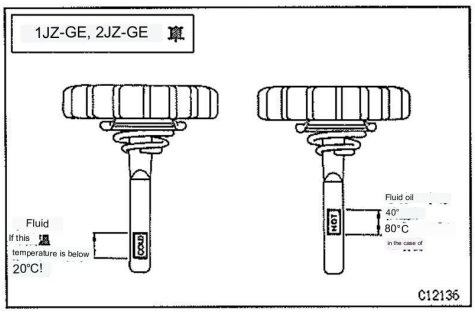
1 Steering wheel play check

Limit: Within 30mm

2 Inspection of vane pump belt tension and deflection

(Refer to "Engine" - "Engine adjustment")





3 Oil reservoir oil level check

(1) Level the vehicle.

(2) Check fluid level.

<reference> If it is below MIN, add power steering fluid to between MAX and MIN.

(3) When the engine speed is below 1000 r/min, lock the steering wheel ツゥ repeatedly to raise the fluid temperature.

Standards 40~80℃

(3) Check that there is no foaming or cloudiness in the fluid from the mouth of the oil reservoir. (4) Check the difference in fluid level between when the engine is running and when it is stopped.

Standard height: Within 5mm If the inspection results in (5), (3), and (4) are negative, bleed the air. If bleeding the air does not work, check the hydraulic system for fluid leaks.

(6) Check that the fluid level is within standard values. Within the range of standard HOT level (at oil temperature 40~80℃)

<Reference> If the oil temperature is low (0~20℃), check that it is within the COLD level range.

★Functional check

★Stationary steering torque check

13

1 Remove the steering wheel pad (see "Steering column")

注意 [See "SRS Airbag" - "Precautions"]

2Stationary steering torque check

(1) Stop the vehicle on a flat paved road.

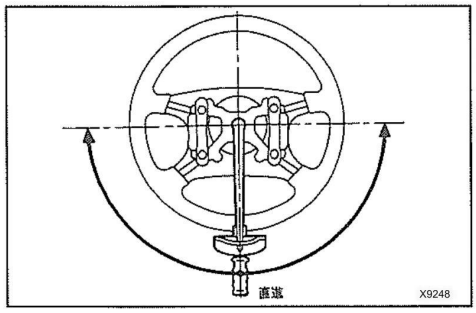
(2) Move the vehicle straight ahead.

(3) Attach a torque wrench to the set nut.

(4) While driving straight, turn the steering wheel 1/4 turn and measure the of torque while rotating. Check in the same way when turning left. Reference value 3.24~5.49N·m {33~56kgf·cm} (oil temperature 80℃)

(5) Check that the steering wheel set nut is not loose.

T=35.3N·m {360kgf·cm}



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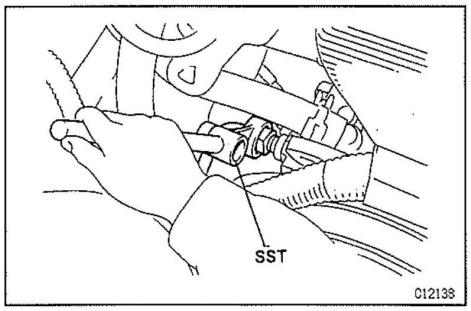

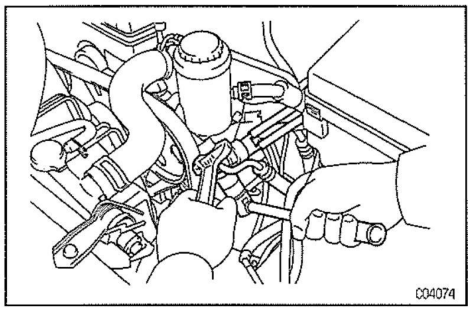

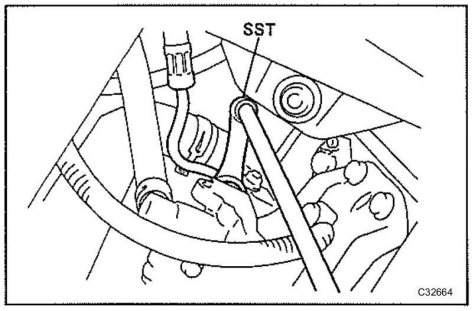

Oil filter inspection

1 Disconnect the pressure feed tube

Vehicle equipped with 1G-FE engine

(1) Using SST, disconnect the pressure feed tube.

S S T 09631-22020

(2) Attach the pressure gauge via the attachment.

PSG-FJL or PSG-A20 (vane pump side)

PSG-FJS or PSG-A10 (pressure feed tube side)

注意 Install the breather gauge valve with it fully open.

Vehicles equipped with 1JZ-GE, 1JZ-GTE, 2JZ-GE engines

(1) Remove the battery.

(2) Use a spanner (24mm) to secure the pressure port union.

(3) Disconnect the pressure feed tube.

(4) Attach the pressure gauge via the attachment.

PSG-FJL or PSG-A20 (vane pump side)

PSG-2ST or PSG-A31 (Pressure feed tube side)

注意 Install the breather gauge valve with it fully open.

(5) Install the battery. Vehicle

equipped with 2L-TE engine

(1) Use SST to disconnect the pressure feed tube.

S S T 09631-22020

(2) Attach the pressure gauge via the attachment.

PSG-FJL or PSG-A20 vane pump side)

PSG-FJS or PSG-A10 (pressure feed tube side)

注意 Install the pressure gauge valve with it fully open.

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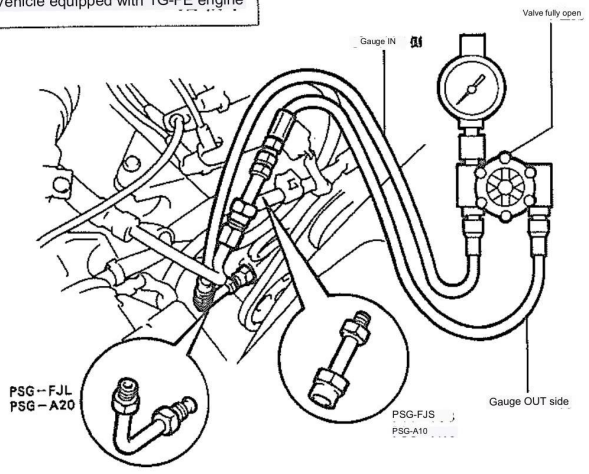
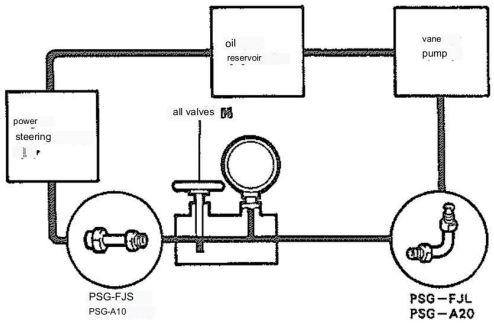
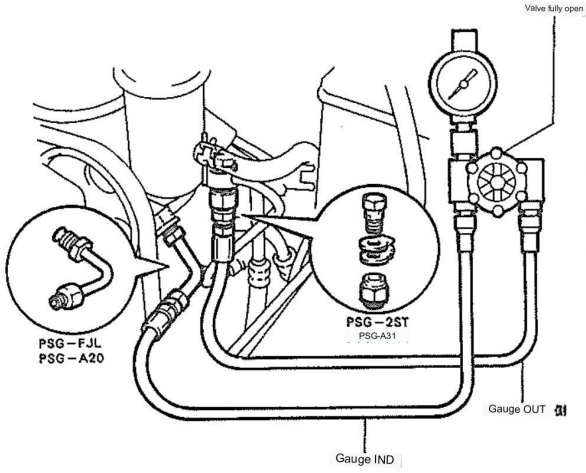
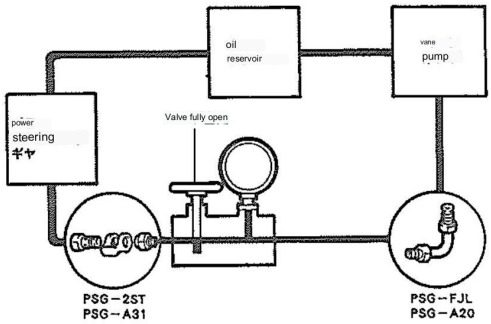
Vehicle equipped with 1G-FE engine





Vehicles equipped with 1JZ-GE, 1JZ-GTE, 2JZ-GE engines





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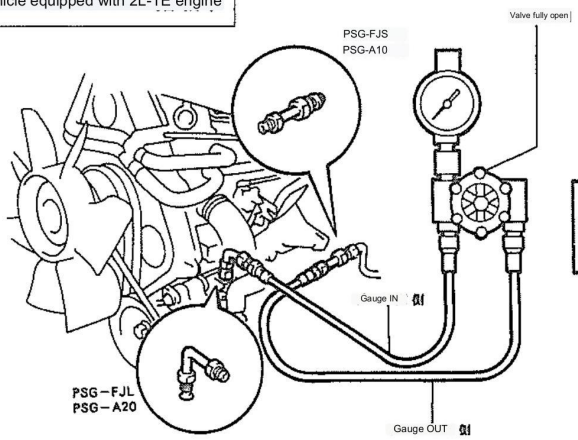
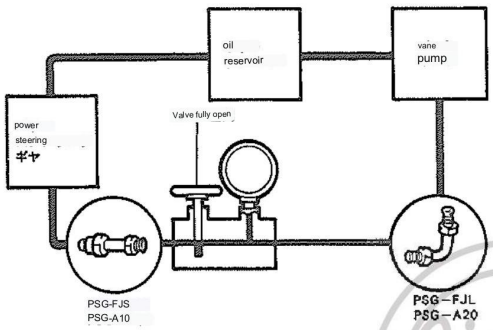
Vehicle equipped with 2L-TE engine





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2 Air bleed

(See "Air bleeding")

3 Setting oil temperature for oil pressure check

(1) Start the engine.

(2) When the engine speed is below 1000r/min, lock the steering wheel ツゥ repeatedly to raise the fluid temperature.

Standard value 75~80°C

4 Vane pump hydraulic pressure check

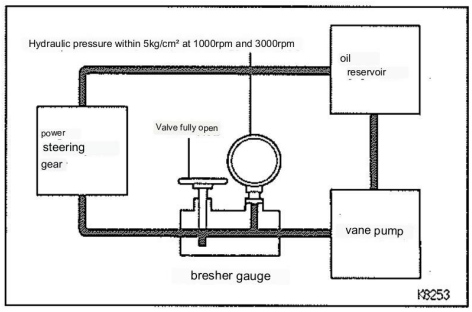
(1) Fully close the pressure gauge valve when idling,

Measure oil pressure.

Reference value

Engine model	発 Raw hydraulic pressure [MPa {kgf/cm}]
1G-FE	6.4 6.9 (65~70)
1JZ-GE	7.4~7.9 (75-80)
1JZ-GTE	7.4~7.9 (75-80)
2JZ-GE	7.4~7.9 (75-80}
2L-TE	7.4 7.9 (75-80}

【Note】 • Do not close the pressure gauge valve for more than 10 seconds.· Do not let the oil temperature rise above 85°C.



5 No-load oil pressure difference check

(1) Fully open the pressure gauge valve.

(2) Measure oil pressure at engine speeds of 1000r/min and 3000r/min,

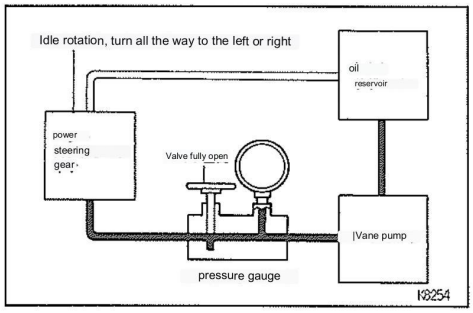
Check the difference.

Standards Within 0.49MPa {5kgf/cm)

If outside the standard value, check the flow control valve of the vane pump.

exchange.

Trare Do not operate the steering wheel.



6 Checking the hydraulic pressure generated in the steering gear housing

(1) Fully open the pressure gauge valve. (2) Turn the steering wheel all the way to the left and right when idling.

Measure the hydraulic pressure.

Standards Same as vane pump hydraulic pressure check

If it is outside the standard value, replace the steering gear control valve.

For more than 10 seconds with the steering wheel fully turned Not retained.

7 Pressure gauge removal

(1) Remove the pressure gauge and attachment.

Vehicle equipped with 1G-FE engine

(2) Connect the pressure feed tube using SST. TENT

09631-22020

T=44.1N·m {450kgf·cm) (Specified tightening torque)

T'=35.7N·m {365kgf·cm) (Reading when using SST and torque wrench 460F)

fruit)

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Vehicles equipped with 1JZ-GE, 1JZ-GTE, 2JZ-GE engines.

(2) Remove the battery.

(3) Use a spanner (24mm) to secure the pressure port union.

do. (4)

Apply pressure with a union bolt through a new gasket.

Connect the feed tube.

T=49N·m {500kgf·

cm} (5) Install the battery.

2LTE engine equipped vehicle

(2) Connect the pressure feed tube using SST.

S S T 09631-22020

T=44.1N·m {450kgf·cm) (Specified tightening torque)

T'=35.7N·m {365kgf·cm) (Reading when using SST and torque wrench 460F)

fruit)

8 Air bleed

((See "Air bleeding")

T0046188

Air release

1 Air release

(1) 10~15mm above the upper level of the cold side of the oil reservoir.

Refill the fluid with. (2)

Let the engine idle for about 2 seconds and then stop.

CAUTION If the fluid in the oil reservoir is below the upper level, refill it to the upper level.

(3) Repeat (2) until the liquid level in the oil reservoir settles to the upper level. (4) Turn

the engine until no air bubbles are visible in the oil in the oil reservoir.

idle the engine.

注意 Never operate the steering wheel.

(5) When the air is no longer visible, slowly turn the steering wheel and

Repeat Kutu Lock 2-3 times. (6) The

liquid level in the oil reservoir will not change and air will no longer be visible.

Repeat steps (4) to (5) until (7)

When the liquid level stops changing, turn the steering wheel all the way.

Hold this position for 2 to 3 seconds, and repeat raising and lowering the oil pressure 2 to 3 times

注意 on each side. For more than 10 seconds with the steering wheel fully turned Not retained.

(8) After confirming that there is no foaming or clouding of the fluid in the oil reservoir, operate the steering wheel a little faster to confirm that there are no jams, abnormal noises, or vibrations.

If there is an abnormality like (9) (8), repeat (6) to (8) again.

注意 Make sure there are no fluid leaks.

(10) Stop the engine.

(11) Check the oil reservoir fluid level.

13

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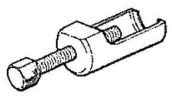
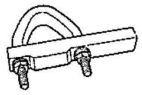
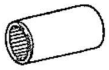
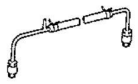
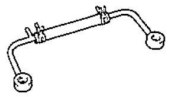
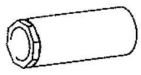
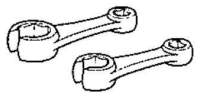
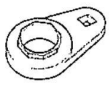
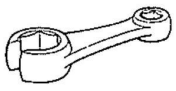
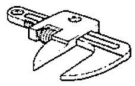
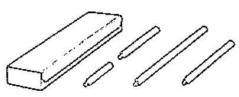
Y0048169

★Power steering gear

supplies

SST

	09610-20012	pitman arm blur	For tearing off tie rod ends
	09612-00012	Rack & Pinion Steering Rack Housing Stand	For fixing steering gear
	09616-00010	Steering worm bearing adjusting socket	Control valve shaft rotation
	09631-12071	Steering rack oil seal test tool	For checking the airtightness of the steering gear (2WD vehicles)
	09631-22030	Steering rack oil seal test tool	For checking the airtightness of the steering gear (4WD vehicles)
	09631-20060	Bearing guide nut wrench	For bearing guide nut removal (excluding PPS vehicles)
	09631-20090	Cylinder end stopper nut wrench	Cylinder end stopper removal and removal
	09631-22020	Power steering hose nut wrench set	For return tube union removal (excluding PPS vehicles)
	09631-22060	Bearing guide nut wrench	For removing and removing bearing guide nuts (PPS)
	09633-00020	power steering hose nut wrench	Turn pressure tube removal and removal
	09922-10010	variable open wrench	Removing and removing rack end and rack guide cap lock nuts
	09950-70010	handle set	

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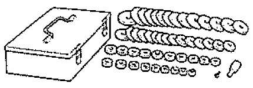
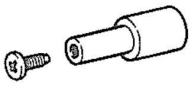
times box

	(09951-07100) handle 100	Bearing guide nut oil seal removal and removal
Handle 150 09951-07150	70149	control valve housing oil seal and bearing mounting
Handle 360 09951-07360	70151	Rack housing oil seal removal and removal
	09950-60010 replacer set	
	(09951-00180) Replacer 18	Control valve housing oil seal removal For attaching]
Replacer 24 09951-00240	70094	Control valve housing oil seal removal For removal
Replacer 25 09951-00250	70095	For rack housing oil seal installation
Replacer 28 09951-00280	70098	For rack housing oil seal removal
Replacer 31 09951-00310	70101	Bearing guide nut oil seal removed (excluding PPS
Replacer 32 09951-00320	70102	vehicles) Control valve housing oil seal removal For attaching
Replacer 34 09951-00340	70104	Control valve housing bearing installation
Ribracer 35 09951-00350	70105	For bearing guide nut oil seal removal (PPS vehicles)
Replacer 38 09951-00380	70108	Bearing guide nut oil seal assembly Bearing
Replacer 42 09951-00420	70112	guide nut oil seal assembly for | for
Replacer 43 09951-00430	70113	For rack housing oil seal installation
	(09952-06010) adapter	For oil seal installation

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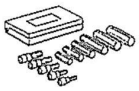
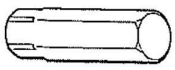
tool

	09040-00010 hexagon wrench set	
	(09043-30240) Straight hexagon wrench 24	Rack guide spring cap removal and removal
Spanner 22×24mm	10403	Rack end removal/detachment
plastic hammer	12101	Each part removed

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計 vessel

	TB-501 mighty back Treated as Banzai Co., Ltd. HVP-1 Treated as Iyasaka Co., Ltd.	For airtightness inspection
Torque wrench [0~3N・m {0~30kgf・cm}]	20114	For preload measurement
V block	20401	For checking steering rack bending
Dial gauge	21201	For checking steering rack bending

Oils and fats Others

	T-P50 rack cover tube 50 Treated as Banzai Co., Ltd., Iyasaka Co., Ltd.	For steering rack assembly
Toyota genuine MP grease No.2	30204	For applying to each part
Toyota genuine chassis grease special	30404	For applying to each part
Toyota genuine power steering fluid	30803	For application and injection of each part
silicone grease	32401	For coating the inner circumference of rack boots
Adhesive 1344	50403	For thread application
Hairdryer	51501	For shrinking rack cover tubes
Wire (2mm)	52003	For inspecting steering rack ventilation holes
Vacuum hose 90999-92002	52012	For blending Teflon ring
newspaper	52702	For steering rack assembly
protective tape	53501	For protecting each part
木Piece	53601	Cylinder end stopper and spacer For assembly
Bolt (M14×P1.5) 90105-14063	54604	For steering rack removal
hose clamp 90460-55012	57001	For blending the ring
Hose clamp 90460-47001	57002	For blending the ring

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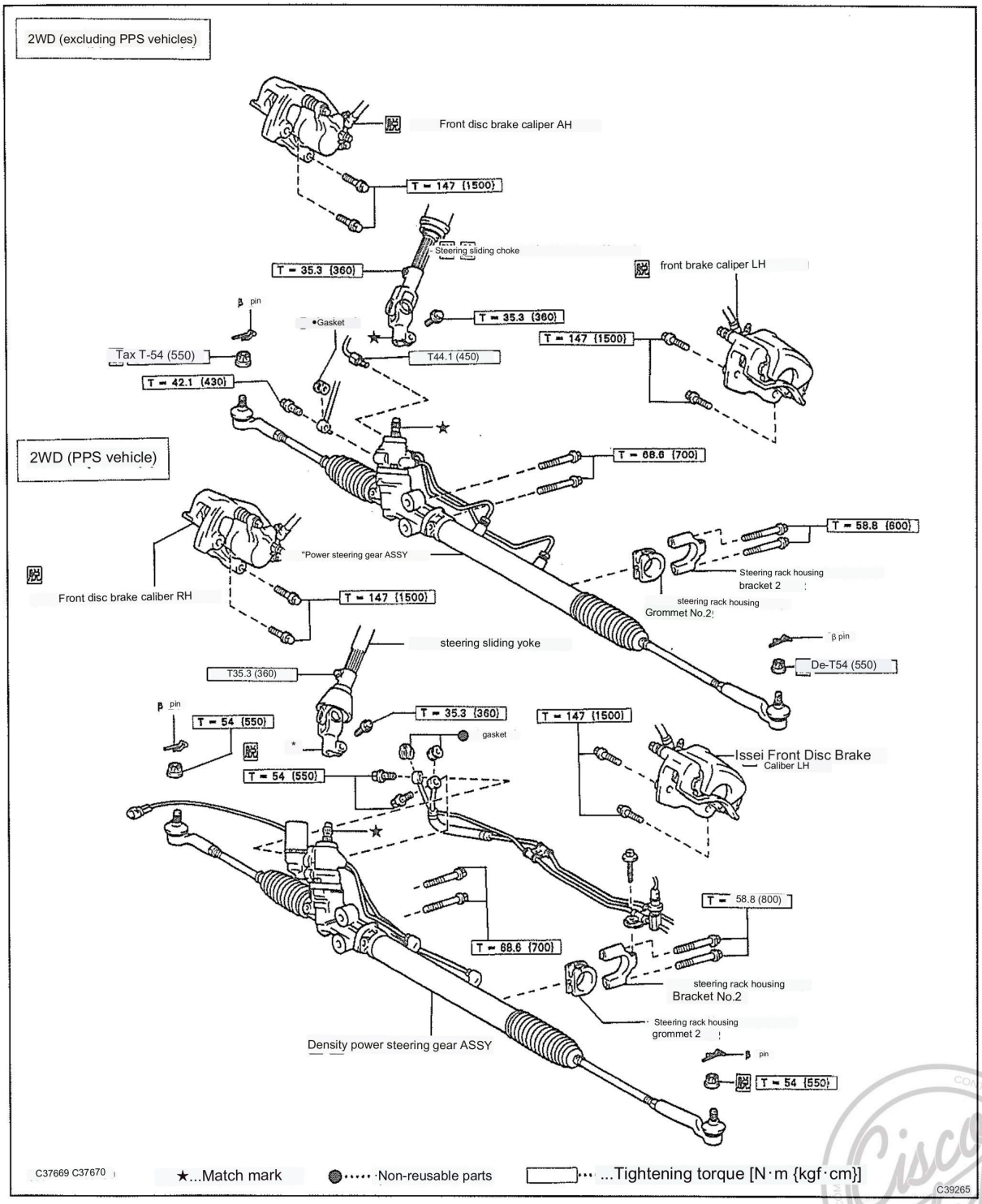
★Power steering gear

★Detachment configuration diagram



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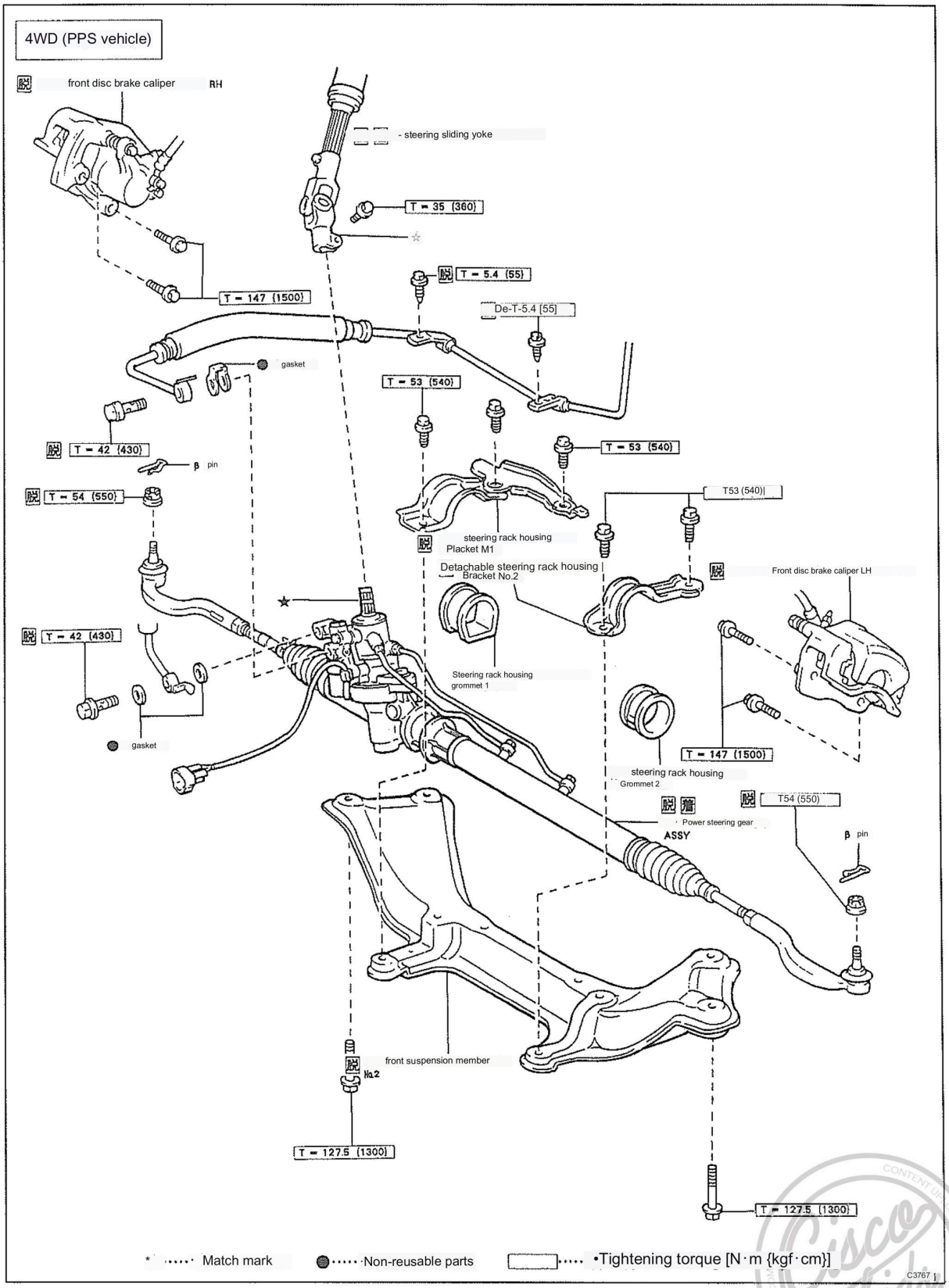

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noodles steamed
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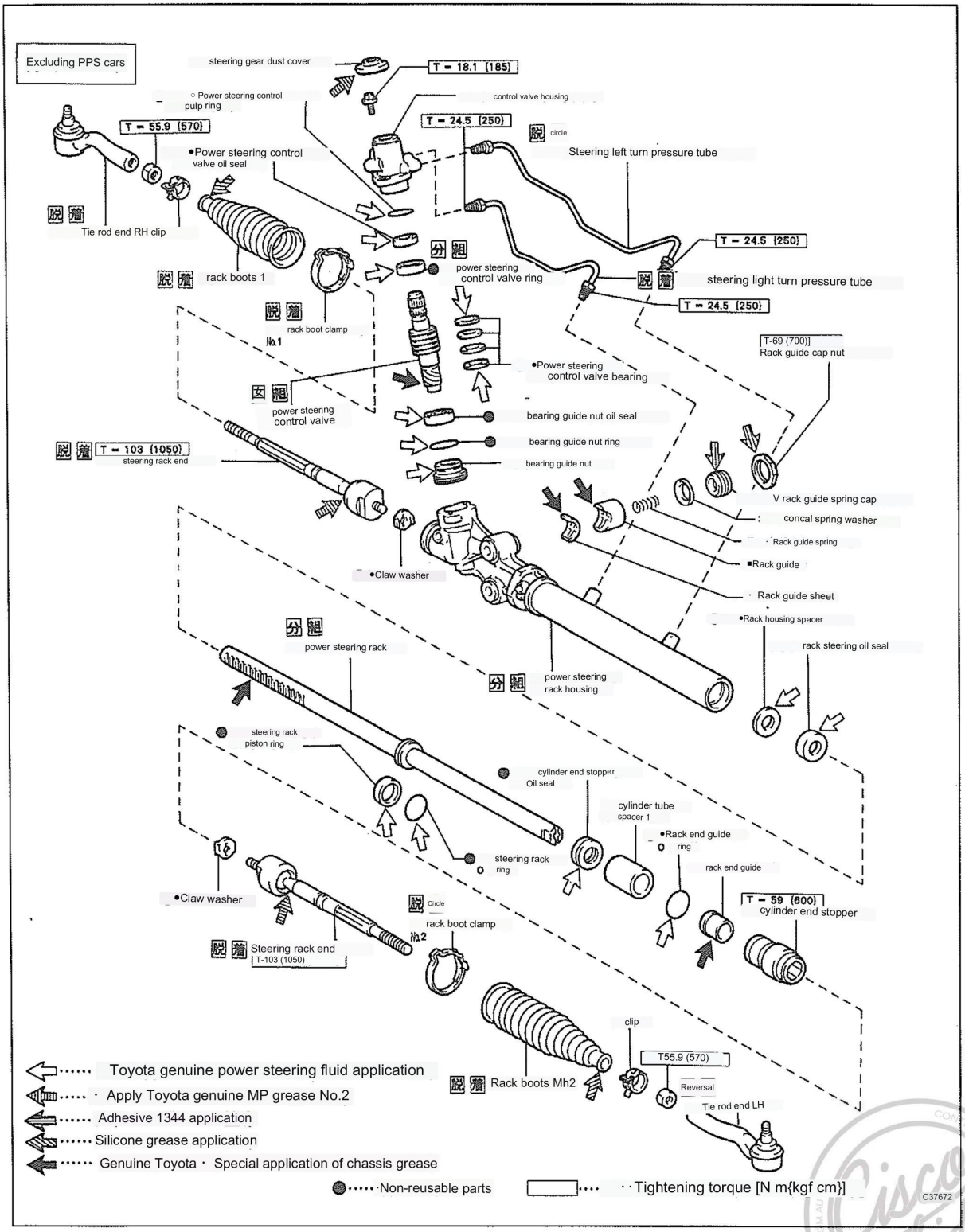
Exploded configuration diagram



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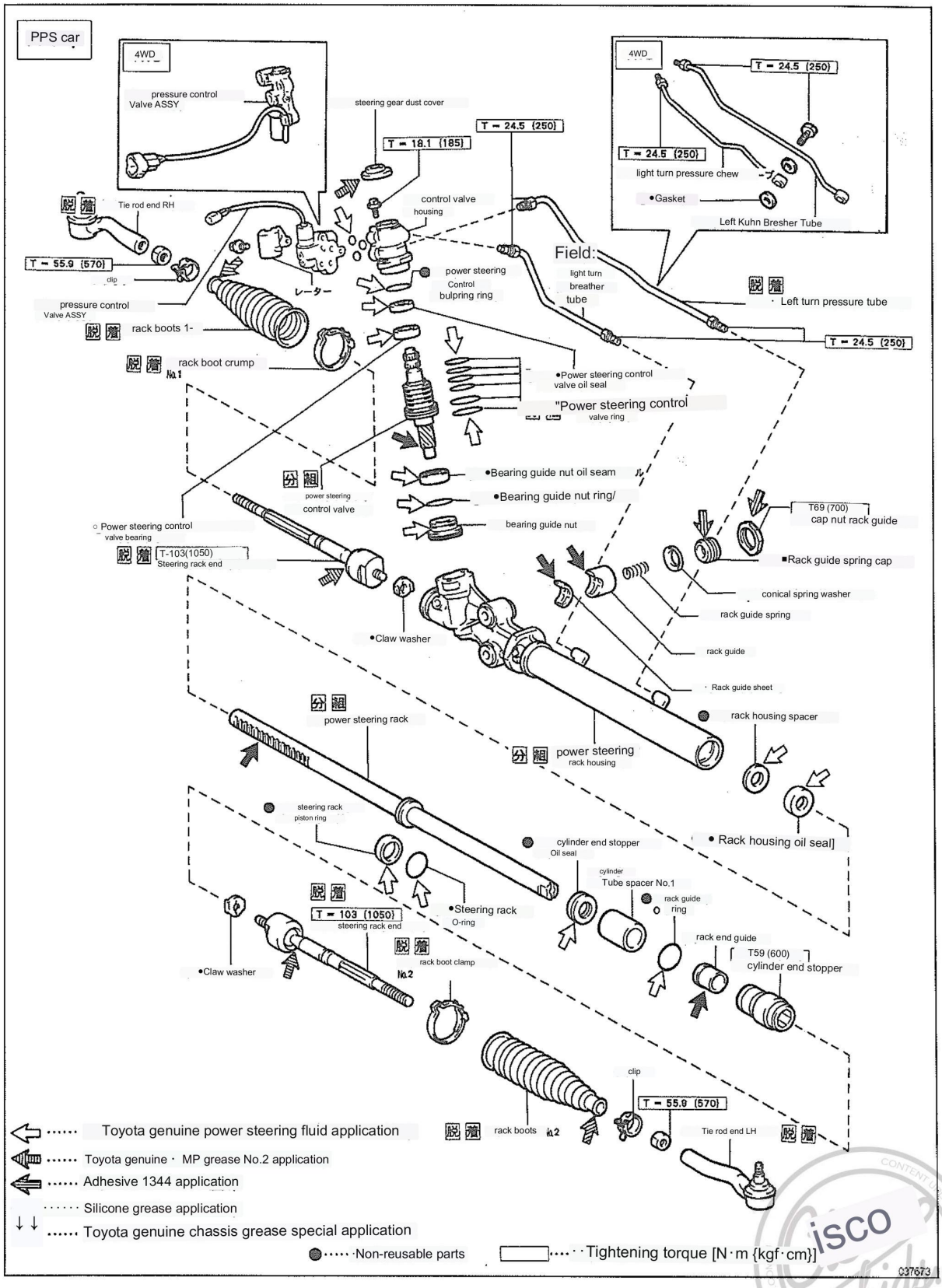

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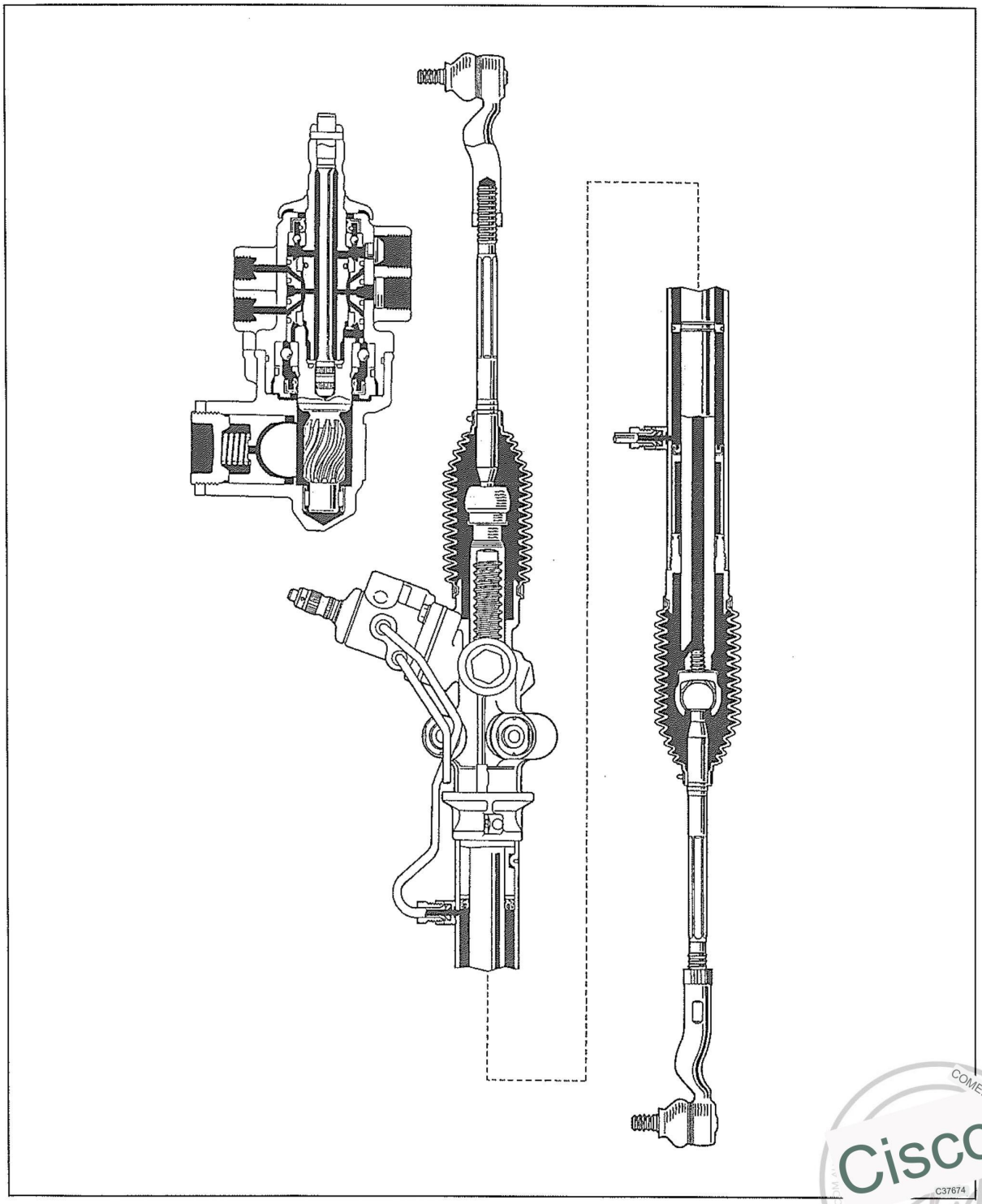
cross section

2WD vehicles (excluding PPS vehicles)



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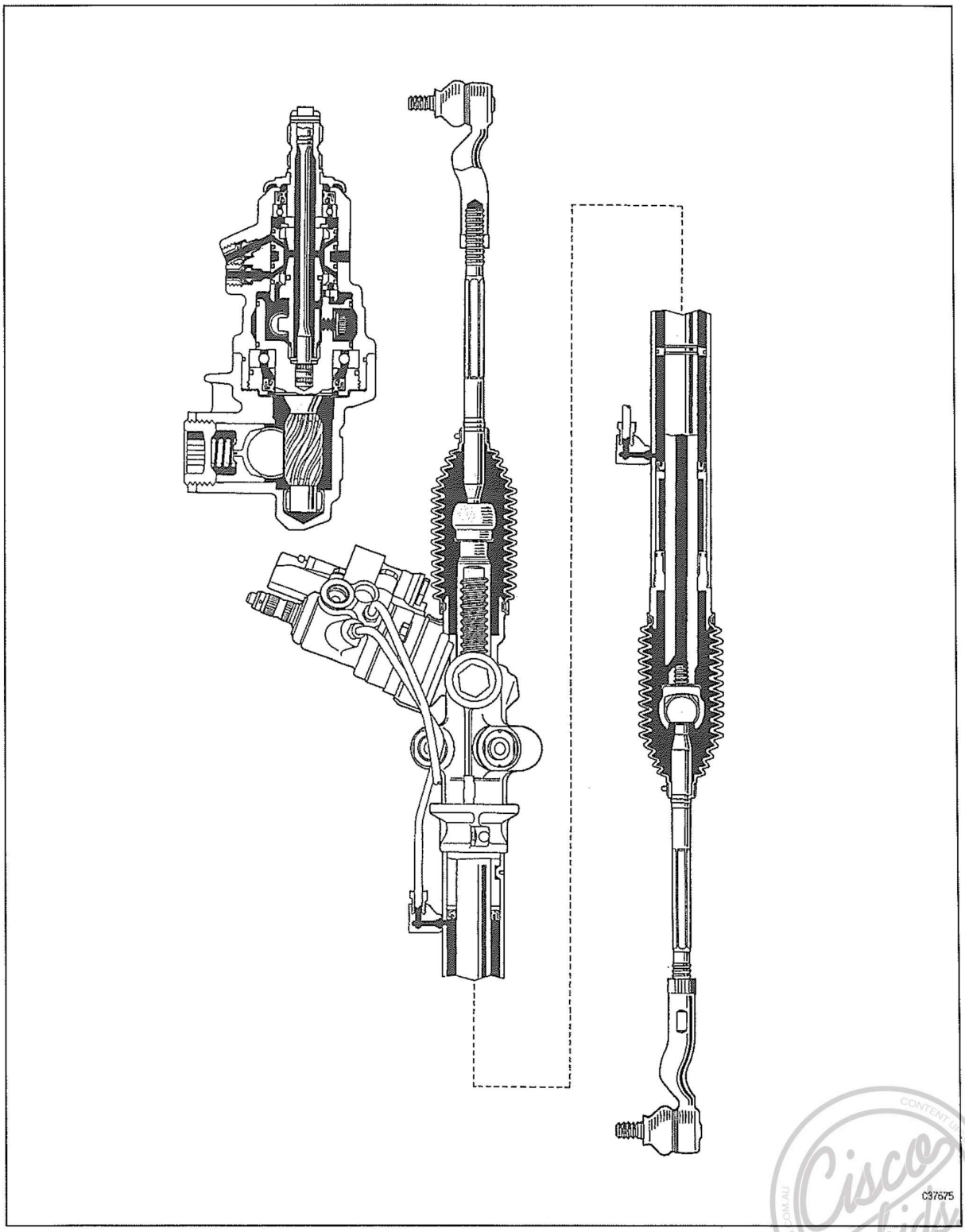
2WD car (PPS car)



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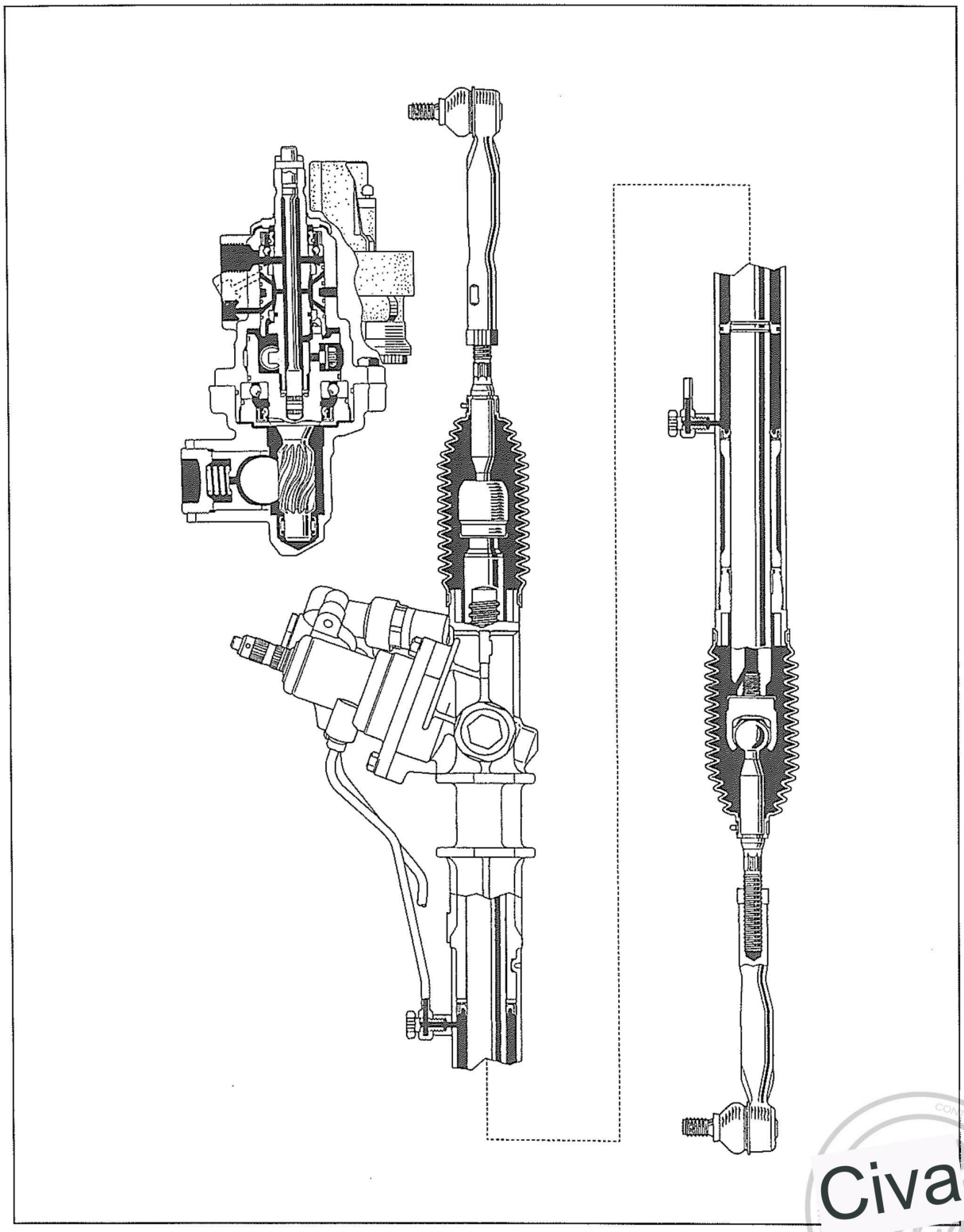
4WD vehicle



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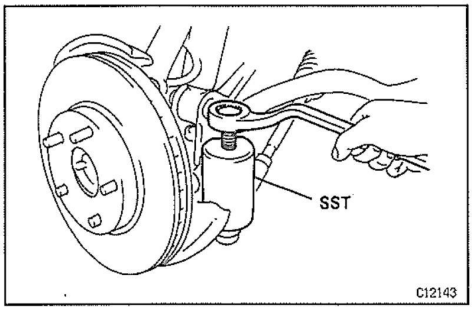

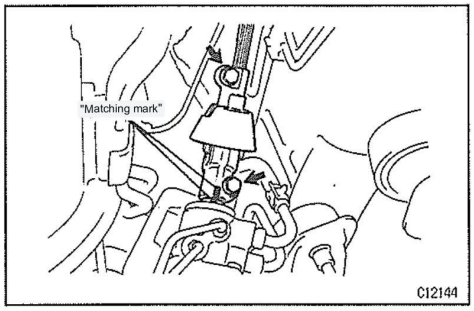

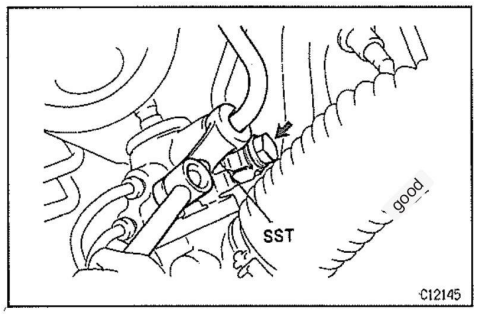

★Points to note when removing the power steering gear

1 Disconnecting the solenoid valve connector (PPS vehicle)

2 Steering wheel removal

("Steering column"

-Refer to "Steering wheel removal")

3 Front disc brake caliper ASSY (RH and LH)

Removal

Caution - Hang the brake caliper ASSY with a wire, etc.·

Do not pull on the flexible hose.

4 Tie rod ends (RH and LH) removal

(1) Remove the β pin and castle nut.

(2) Using SST, remove the tie rod end from the steering

knuckle.

S S T 09610-20012

注意 Do not damage the ball joint dust cover.

5 Sliding yoke separation

(1) On the column side (upper side) of the steering sliding yoke

Loosen the bolt.

(2) Remove the bolt on the gear side (lower side) of the steering

sliding yoke.

(3) Mark the alignment mark and separate the steering gear.

6 Pressure feed tube and return tube cutting

[Release

Excluding PPS cars

(1) Remove the union bolt and gasket, and apply pressure

Remove the feed tube. (2)

Use SST to disconnect the return tube. SST

09631-22020

PPS car

(1) Remove the two union bolts and gasket, and apply pressure

Remove the feed tube and return tube.

7 Pressure feed tube bracket removal

(Excluding vehicles equipped

8 with 1G-FE) Steering gear ASSY removal

2WD East

(1) Remove the four bolts and remove the rack housing

bracket and steering gear ASSY.

4WD vehicle

(1) Jack up front suspension member No. 2 and

remove the 5 bolts.

(2) Remove the 5 bolts and remove the rack housing

·bracket and steering gear ASSY.

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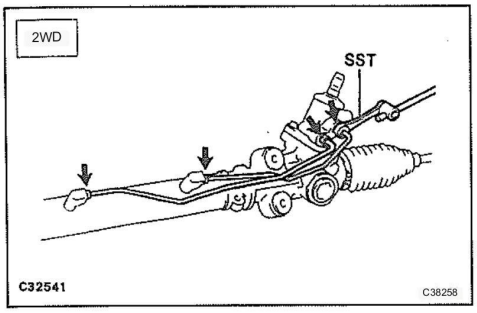


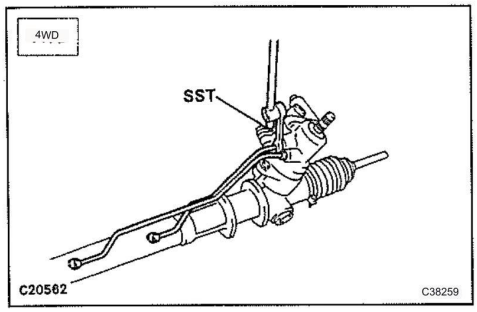
Power steering gear ASSY disassembly

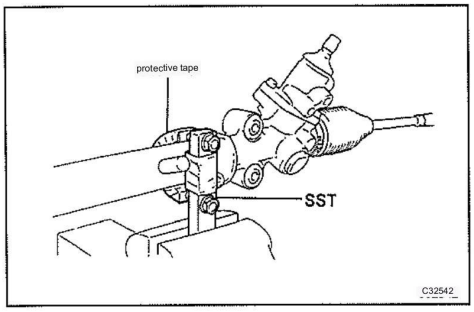
1 turn Pressure tube removal

(1) Using SST, remove the two tubes.

S S T 09633-00020

注意 If you move the steering rack with the turn pressure tube disconnected, residual fluid may spill out.



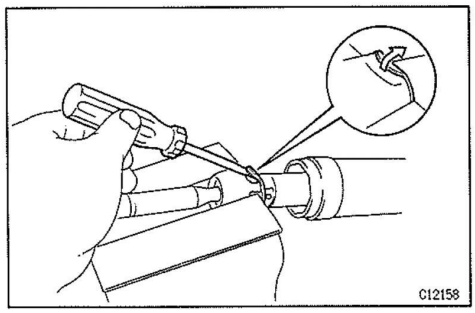


2 Power steering gear ASSY fixed

(1) Using the SST wrapped with protective tape, attach Fix it in a vise.

and detach the

注意 steering gear ASSY SST 09612-00012 as necessary.



3 Removing tie rod ends (RH and LH) (1)

Make alignment marks on the rack end and tie rod end.

注意 The alignment marks should be so that left and right can be distinguished.

(2) Remove the tie rod end and lock nut.

4 Removing steering rack boots No. 1 and No. 2

(1) Remove the clips and clamps, and remove the steering rack boots.

5 Steering rack end (RH and LH) removal

(1) Gently secure the rack end ball joint in a vise.

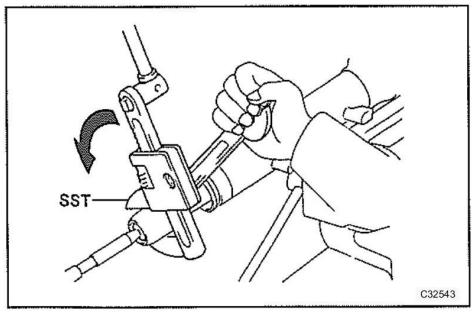
(2) Use a screwdriver and hammer to remove the claw washer. Uncold.

(Note) · Do not apply shock to the steering rack.· Do not tighten the vise too tightly.

(3) Using SST and spanner (22mm), remove the rack end and claw washer.

S S T 09922-10010

注意 Be sure to use SST in the wrong direction.



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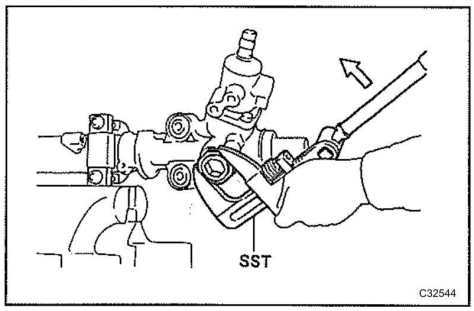


6 Removing the steering rack guide cap nut

(1) Using SST, remove the lock nut. SST

09922-10010

Be sure to use SST in the wrong direction.

7 Removing the steering rack guide spring

cap (1) Using straight hexagon wrench 24, remove the spring cap.

8 Steering rack guide removal

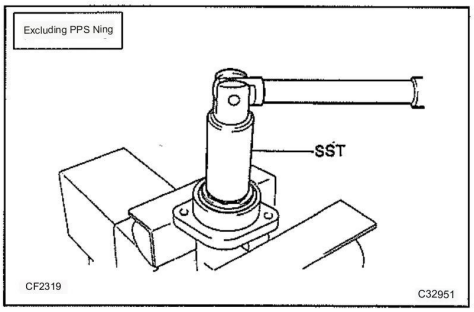
(1) Conical spring washer, spring from rack housing

Remove the mounting and rack guide.

(2) Remove the rack guide sheet from the rack guide.

9 Removing the power steering control valve ASSY

(1) Remove the two bolts and remove the control valve ASSY.



10 Removing the power steering control valve

Excluding PPS cars

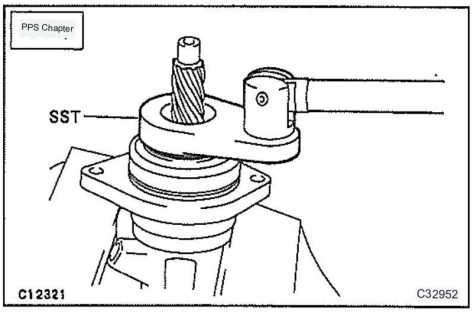
(1) Remove the dust cover.

(2) Gently secure the control valve ASSY in a vise.

Caution: Do not tighten the vise too tightly. (3) Using SST, remove the bearing guide nut.

S S T 09631-20060

(4) Remove the O-ring from the guide nut.

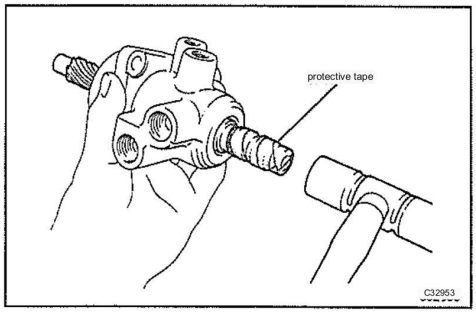


(5) Wrap protective tape around the serrations of the control

(6) valve. Using a plastic hammer, gently tighten the control valve.

Tap to remove.

Note: Do not damage the oil seal lip inside the valve housing.



PPS car

(1) Remove the dust cover.

(2) Gently secure the control valve ASSY in a vise.

Do not tighten the vise too tightly.

(3) Using SST, remove the bearing guide nut.

S S T 09631-22060

(4) Remove the O-ring from the guide nut.

(5) Wrap protective tape around the serrations of the control valve.

(6) Use a plastic hammer to gently tighten the control valve.

Tap to remove. ENT

Do not damage the oil seal lip inside the valve housing.

13

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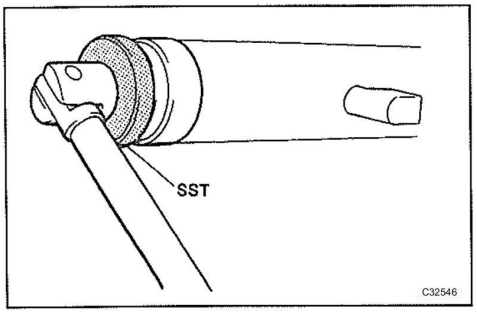
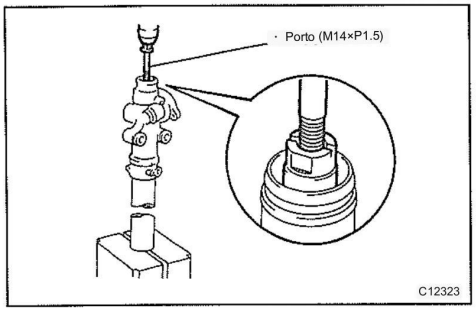


11 Cylinder end stopper removal

(1) Remove the cylinder end stopper using SST.

S S T 09631-20090

(2) Remove the O-ring and cylinder end stopper bushing from the cylinder end stopper.



12 Power steering cylinder tube spacer No.1 removal

Removal

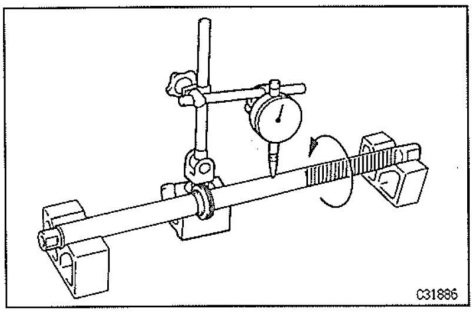
13 Steering rack removal

(1) Using bolts (M14 x P1.5) and a press, remove

Remove the rack.

the oil seal from the steering (2) steering rack.

T0048171



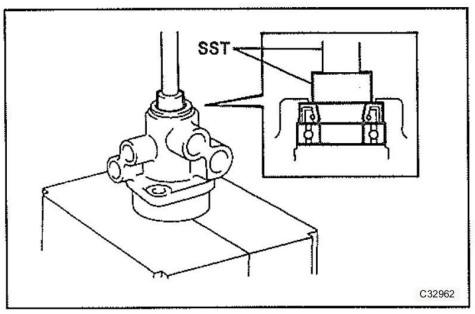
Inspection and replacement of steering gear components

1 Steering rack inspection

(1) Inspect tooth surfaces for wear and damage.

(2) Check the steering rack for bending using the V-block and dial gauge.

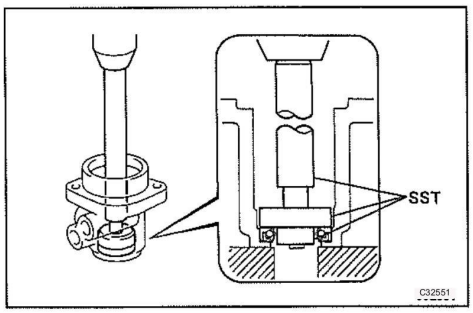
Limit 00.15mm (center of steering rack)



2 Remove the power steering control valve bearing and oil seal replacement

(1) Remove pairing and oil seal 13 using SST and press.

S S T 09951-00240 09951-07100



(2) Apply MP grease No. 2 to the new oil seal lip.

(3) Assemble the oil seal using SST and press. SST

09951-00180 09951-00320 09951-07150 09952-06010

注意 Do not install the oil seal in the wrong direction.

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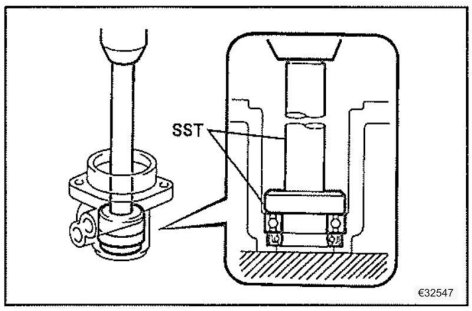
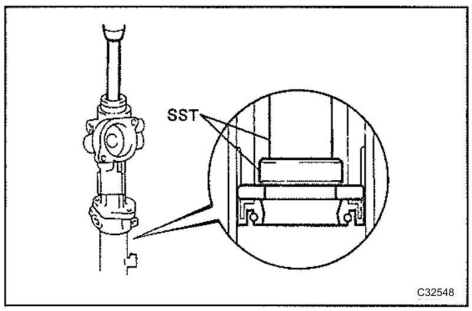


(4) Assemble the new bearing using SST and press. SST

099951-00340 09951-07150



3 Replace the power steering rack oil seal and spacer.

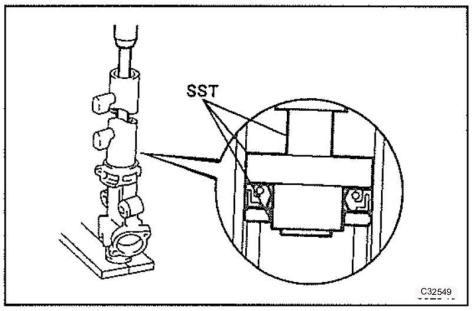
(1)

Using SST and press, oil seal and spacer

Remove.

S S T 09951-00280 09951-07360 Do

注意 not damage the inner surface of the rack housing.



(2) Apply power to the new oil seal lip and new spacer.

Apply steering fluid.

(3) Attach the spacer to the rack housing.

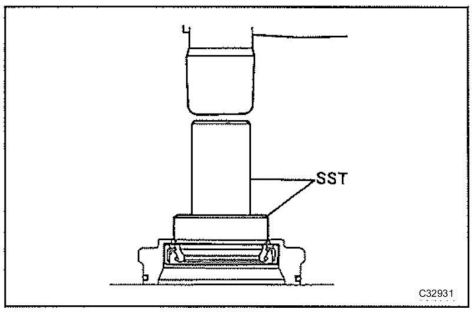
(4) Install the oil seal using SST.

S S T 09951-00250 09951-00430 09951-07360

09952-06010

Caution - Assemble the oil seal straight. Do not install the oil seal in the wrong direction.

13



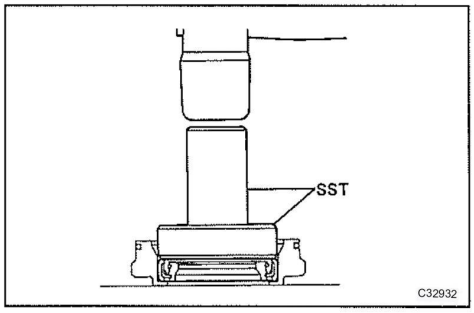
4 Bearing guide nut oil seal replacement

(1) Using SST, remove the oil seal. 09951-00310

S S T (excluding PPS vehicles) 09951-00350 (PPS)

09951-07100

(2) Apply power steering fluid to the new oil seal lip.



(3) Assemble the oil seal using SST. SST 09951-00380

(excluding PPS vehicles) 09951-00420 (PPS)

09951-07100

Caution Do not install the oil seal in the wrong direction.

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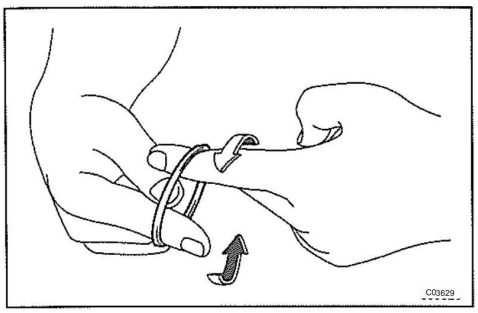

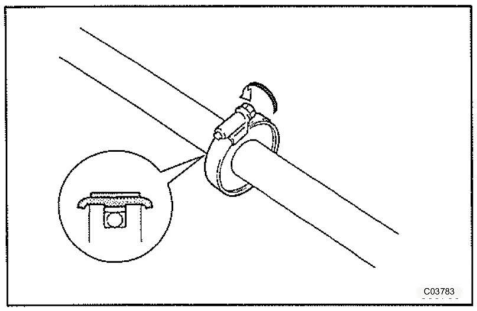

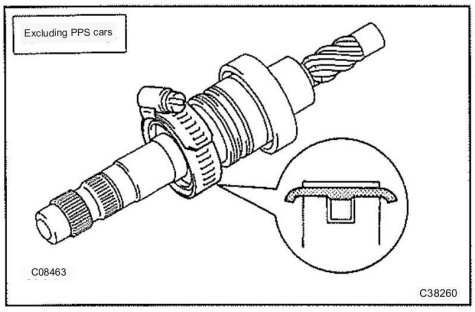

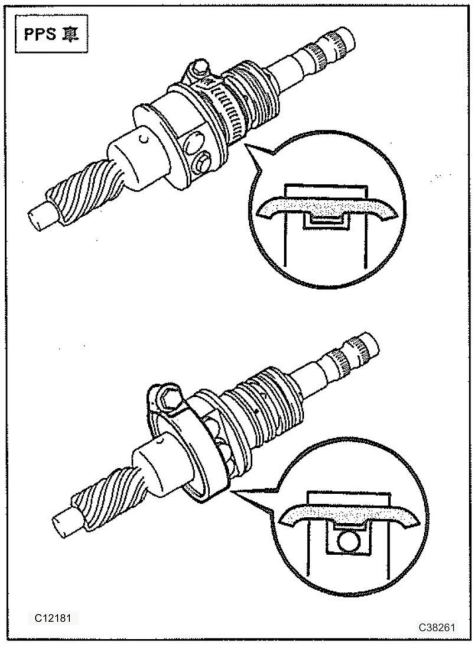

5 Steering rack piston ring replacement (1)

Using a thin blade screwdriver, remove the piston ring and O-ring

Remove.

注意 Do not damage the inside of the ring groove.

(2) Apply power steering fluid to the new O-ring and

Attach to the steering rack.

(3) Apply power steering fluid to the new piston ring.

then use your fingers to expand the ring to make it easier to attach. · Do

注意 not damage the ring with your fingernails, etc.

• Expand the ring evenly throughout the ring

- Do not expand the ring too much.

(4) Attach the piston ring to the steering rack and hold it by hand.

Let it blend

in. (5) Use a vacuum hose and hose clamp to expand

Shrink the piston rings.

6 Power steering control valve ring replacement

Excluding PPS cars

(1) Using a thin blade screwdriver, remove the four rings. Do not

注意 damage the inside of the ring.

(2) Apply power steering fluid to the new ring and expand it to make

it easier to install with your fingers.

注意 · Do not damage the ring with your fingernails, etc.

· The ring expands uniformly around the entire

circumference. - Do not overextend the ring.

(3) Attach the ring to the control valve and press it with your

hand

to blend it. (4) Use the vacuum hose and hose clamp to expand

Shrink the ring.

PPS car

(1) Using a thin blade screwdriver, remove the 6 rings. Caution:

Do not damage the inside of the ring.

(2) Apply power steering fluid to the 4 new small-diameter rings and 2 large-diameter

rings, and expand them so that they can be easily installed with your fingers.

Ru · Do

注意 not damage the ring with your fingernails, etc.

· Ring expands uniformly around the entire circumference

- Do not overextend the ring. (3)

Install the four small diameter rings in order from the back.

注意 Will not damage the ring.

(4) Attach two large diameter rings.

注意 Will not damage the ring.

(5) Shrink the expanded ring using a vacuum hose

and hose clamp.

13

times family reunion
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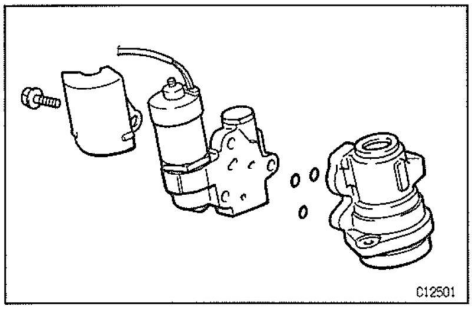
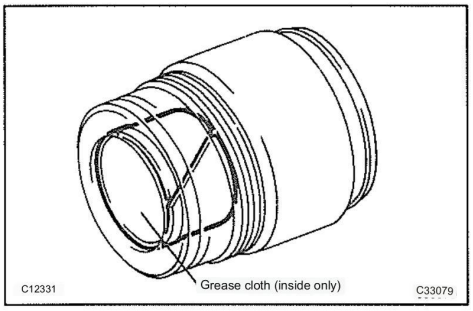


7 Pressure control valve ring replacement (PPS)

(1) Remove the three bolts, and remove the pressure control valve and three O-rings from the control valve housing.

(2) Apply power steering fluid to three new O-rings and install them into the control valve housing. CAUTION Do not damage the mounting surface of the ring.

(3) Install the pressure control valve with 3 bolts.



8 Rack end guide inspection

(1) Check that there are no scratches on the inner surface of the guide.

(2) Apply chassis grease special to the inner surface of the guide.

注意 Do not apply grease to the outside of the guide.

9 Tie rod end inspection

(1) Gently secure the ball joint of the tie rod end in a vise. do.

(2) Temporarily attach the castle nut.

(3) Rotate the ball joint 5 times.

(Four) Set the torque wrench on the nut and turn it at a speed of 1 rotation/2~4 seconds. Rotate the ball joint continuously and apply the rotational torque for the fifth time. Inspection to.

Standard value 0.49~3.43N·m {5~35kgf·cm}

Steering gear assembly

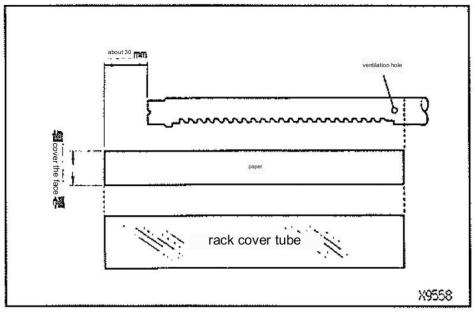
13

1 Applying oil and fat to each part

(Refer to "Power Steering Gear" - "Exploded Configuration Diagram")

2 Steering gear assembly

注意 Since the rack cover tube is used to protect the oil seal, damage to the surface of the tube may cause oil leakage. Therefore, there is no damage such as burrs or cracks on the tube surface before shrinking. After checking, use it.



(1) Prepare a rack cover tube and paper as thick as newspaper. ① Cut the rack cover tube so that it is approximately 3 cm longer than the tip of the rack, covering the tooth surface and ventilation holes.

② Width of paper as thick as newspaper to cover the tooth surface of the steering rack Cut it to the same length as the black cover tube. CON To prevent rack tooth marks from remaining on the shrink tube, use use.

steamed noodles
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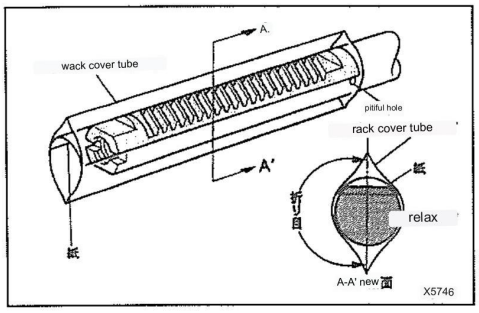


(2) Shrink the rack cover tube as follows.

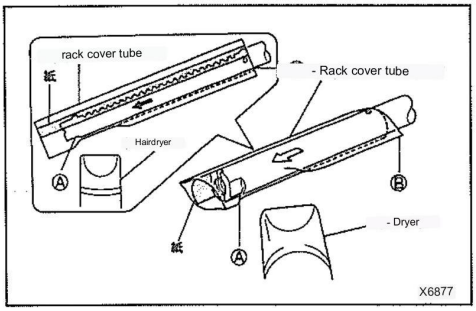
① Fill the valleys of the rack teeth with chassis grease

special.

② Set the paper so that it covers the rack tooth surface.

③ Cover the ventilation hole with the rack copper tube in the direction of the fold as shown in the illustration.

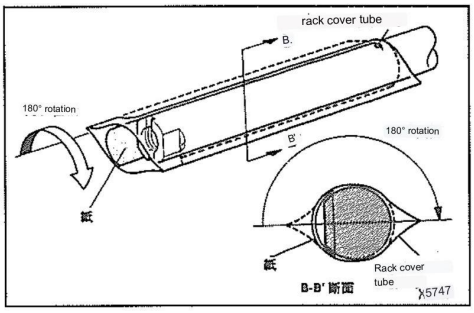
う Insert up to the position.



④ Using the rear side of the teeth, place the rack diagonally against the air outlet of the dryer as shown in the diagram, and move the rack from part ⑧ to part ⑧ so as to push out the air in the tube toward the ® side. Store the tube up to Shrink. If

注意 you use the tooth side, the teeth will remain on the tube and the tube will be difficult to remove, so use the back side.

<Reference> Since the folds in the tube are contracted on one side at a time, it is easier to use a dryer with a narrowed outlet.



⑤ Rotate only the rack tube 180°.

⑤ Similar to step ④, use the back of the tooth to shrink the tube.

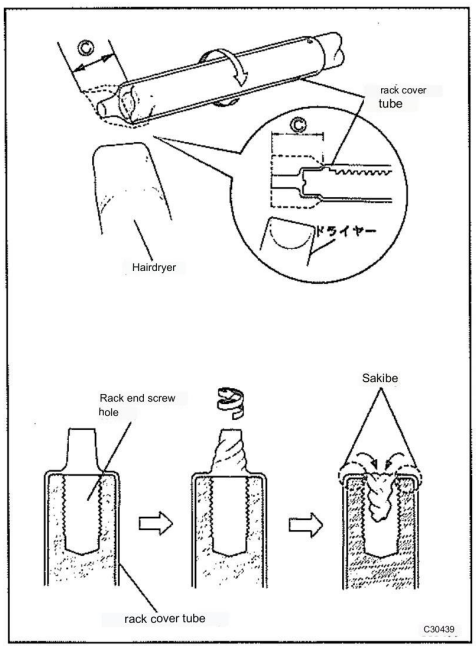
Ru.

⑦ Remove the paper.

<reference> If the paper tears, pull out the tube and remove the paper. na

When assembling the tube, make sure to insert it until it covers the ventilation hole.

do.



⑧ Rotate the rack and tighten only the tip part enough, then quickly twist the tube and push it into the screw hole at the end of the rack. [Caution: If the

tooth surface is heated, the tube tooth profile will remain and become difficult to remove. 13

Heat only the ◎ tip.

⑨Make sure there are no protrusions or edges on the tip.

⑩ If there is a protrusion or edge on the tip, warm the tip again and make a ball.

Push it into the screw hole using a pen, etc.

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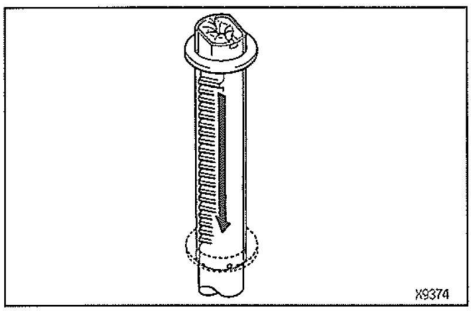
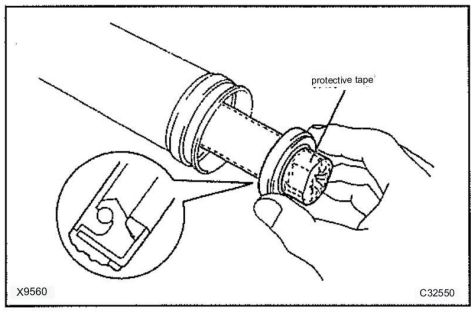
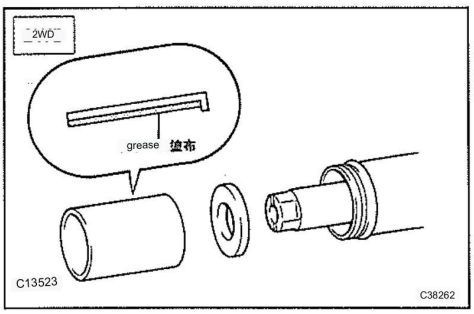


① Check that the spacer of the rack housing oil seal passes smoothly without getting caught. Note Before starting work, make sure that there are no burrs on the inner circumference of the spacer.
⑩ Check that there are no scratches on the tube surface. (3) Apply power steering fluid to the rack cover tube and piston ring of the steering rack.

(4) Assemble the steering rack to the gear housing.
Do not damage the piston rings.
(5) Remove the rack copper tube. •Rack cover tube cannot be reused. - After removing the rack cover tube, do not move the rack any more than necessary until the control valve is installed, as rack overstroke may damage the oil seals on the tooth surfaces and ventilation holes.



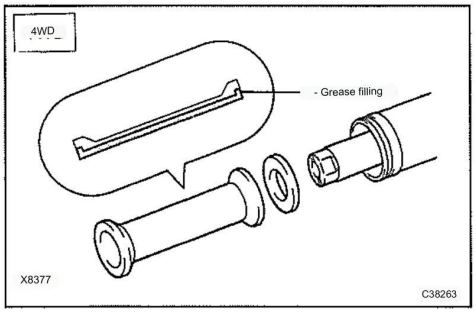
3 Rack housing oil seal assembly
(1) Wrap protective tape around the end of the steering rack.
(2) Apply power steering fluid to the new oil seal lip.
(3) Apply power steering fluid to the protective tape.
(4) Assemble the oil seal. Caution
Do not install the oil seal in the wrong direction.·
Do not tilt the oil seal.
(5) Remove the protective tape.



4 Assembling cylinder end stopper and cylinder tube spacer No.1

2WD car

(1) Apply Chassis Grease Special to the spacer at the location shown in the diagram.



4WD vehicle

(1) Apply Chassis Grease Special to the spacer at the location shown in the diagram.

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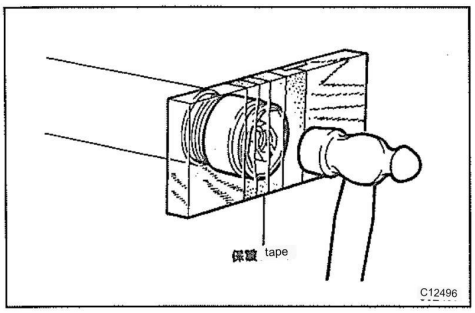


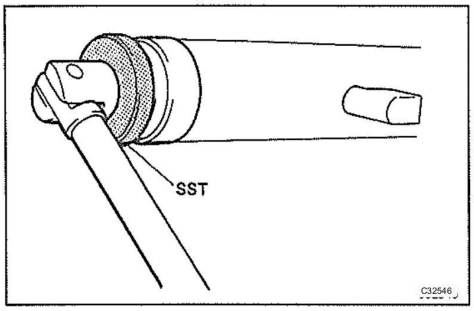
(2) Assemble the spacer using a piece of wood wrapped with protective tape.

〈参考〉 Wrap with protective tape to prevent wood chips from forming.

(3) Apply chassis grease to the inner surface of the cylinder end stopper pusher.

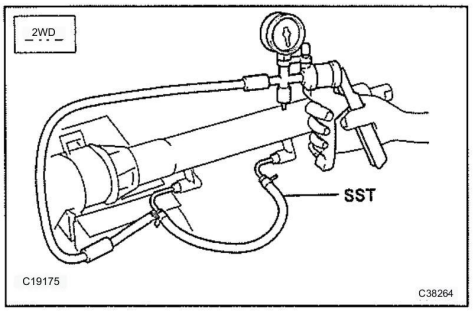
Apply special.

(4) Using a piece of wood wrapped with protective tape, drive in the end stopper until it is tightened.



(5) Assemble the cylinder end stopper using SST.

S S T 09631-20090



5 Airtightness test

(1) Attach the SST to the rack housing.

SST 09631-12071

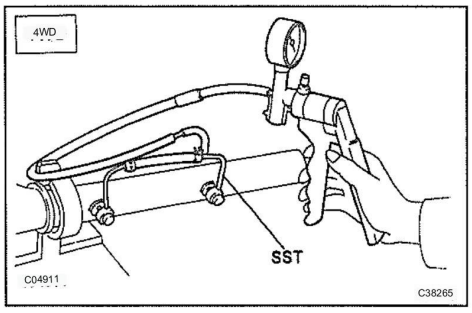
(2) Attach Mighty Back to SST.

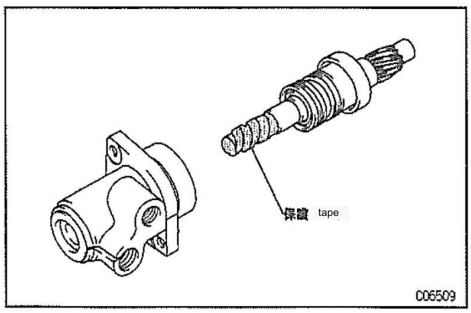
(3) When applying a negative pressure of 53.33kPa {400mm Hg} and maintaining it for approximately 30 seconds, check that there is no change in the pointer.

If there is a leak, check the rack housing oil seal and

Inspect and replace the linder end stopper oil seal.

(4) Remove Mighty Back and SST.





6 Control valve assembly

(1) Wrap protective tape around the serrations of the

control valve. (2) Oil in control valve ring and valve housing

Apply power steering fluid to the seal lip. (3)

Assemble the control valve to the housing.

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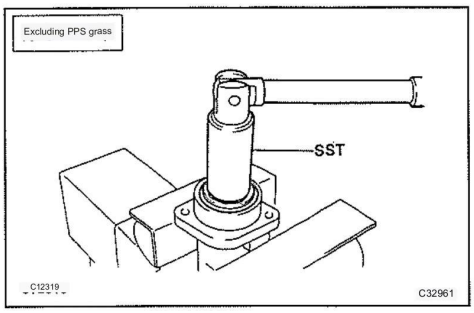


{4} Apply power steering fluid to the new O-ring and Assemble to the ring guide nut.

(5) Gently secure the control valve ASSY in a vise.

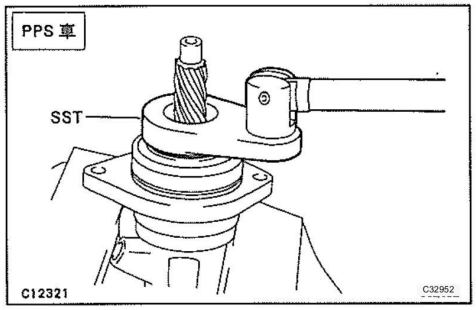
Note Do not tighten the vise too tightly.

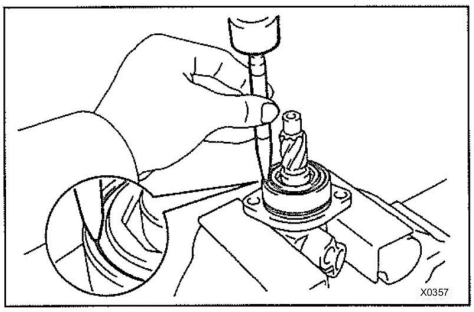
(6) Assemble the guide nut using SST.

S S T 09631-20060 (excluding PPS vehicles) 09631-22060 (PPS vehicles)

T=24.5N·m {250kgf·cm) (excluding PPS vehicles)

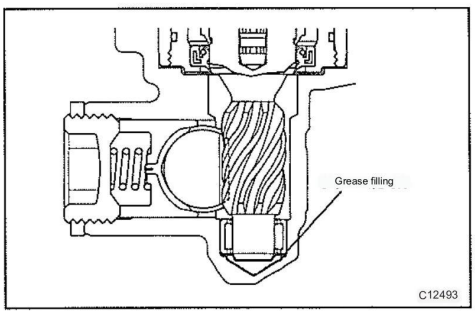
T=32.5N·m {330kgf·cm) (PPS vehicle)





(7) Using a punch, remove the bearing guide nut and valve housing caulk.

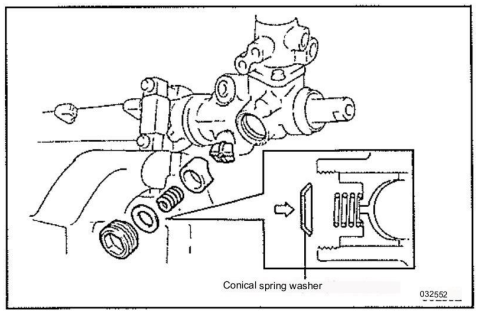
13



7 Control valve ASSY assembly

(1) Fill the valleys of the pinion teeth with chassis grease special.

(2) Needle roller bearing in rack housing, chassis Apply grease special. (3) Apply chassis grease special to the position shown in the illustration on the rack housing. Fill it up. (4) Assemble the control valve ASSY to the rack housing using two bolts.



8 Steering rack guide assembly

(1) Apply Chassis Grease Special to the outer circumference of the rack guide sheet and the rack contact surface. (2) Assemble the rack guide and seat.

9 Rack guide springs and rack guide springs Cap assembly

(1) Clean the threaded part of the cap and housing.

(2) Assemble the spring.

(3) Assemble the conical spring washer in the direction shown in the diagram.

(4) Apply Adhesive 1344 to the threaded part of the cap and temporarily tighten it.

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10 Comprehensive preload adjustment

(1) Using a straight hexagon wrench 24, install the rack guide sprocket.

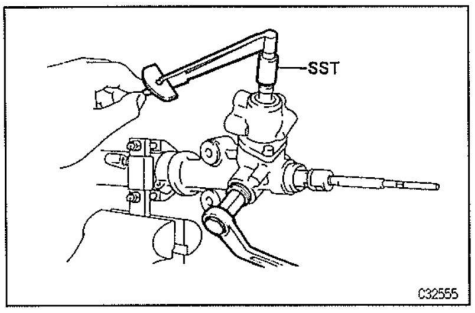
Tighten the ring cap.

T=24.5N· m(250kgf*cm)

(2) Using straight hexagon wrench 24, loosen the rack guide spring cap by approximately 12°.

(3) Temporarily attach the steering rack end.

Caution If the steering rack is moved to its full stroke without attaching the rack ends, the oil seal will be damaged, so be sure to Attach the end. (4)



Use SST to fully stroke the steering rack once or twice.

to adjust the steering rack.

S S T 09616-00010

(5) Using a straight hexagon wrench 24, install the rack guide sprocket.

Loosen the ring cap. (6)

Tighten the rack guide spring cap using the SST and straight hexagon wrench 24 so that the rotational torque of the control valve shaft is at the standard value.

S S T 09616-00010

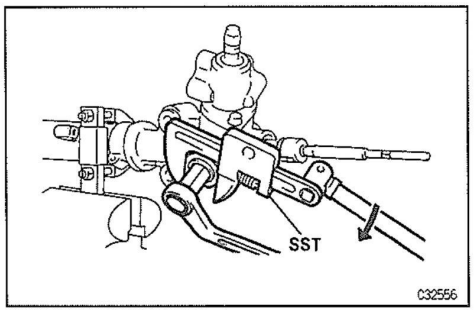
Reference value (during rotation)

1.12~1.82N·m (11.4~18.6kgf· cm) (Tourer series excluding PPS cars)

0.95~1.65N·m {9.6~16.8kgf·cm) (PPS vehicle)

0.82~1.56N.m (8.3~15.5kgf· cm) (excluding PPS vehicles)

1.23~1.91N· m(12.5~19.5kgf· cm} (PPS vehicle 4WD)



11 Assembling the steering rack guide cap nut (1)

Clean the threaded part of the cap nut.

(2) Apply Adhesive 1344 to the threaded part of the cap nut.

(3) Using SST and straight hexagon wrench 24,

Fix the locking cap and tighten the cap nut.

S S T 09922-10010

Be sure to use SST in the wrong direction. (4) Remove the steering rack end.

12 Comprehensive preload inspection

(1) Using the SST and torque wrench, tighten the control valve shaft.

Check the torque while rotating the foot.

S S T 09616-00010

Reference value (during rotation)

1.12~1.82N·m {11.4~18.6kgf· cm) (Tourer series excluding PPS cars) 0.95~1.65N·m {9.6~16.8kgf· cm) (PPS)

0.82~1.56N·m {8.3~15.5kgf·cm} (excluding PPS vehicles)

1.23~1.91N·m (12.5~19.5kgf· cm} (PPS vehicle

4WD) Do not fully stroke the steering rack.

13

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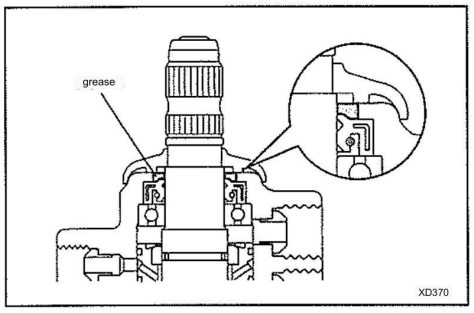

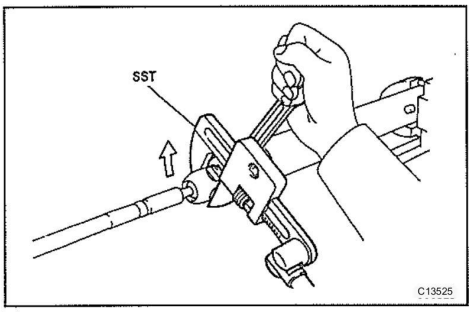

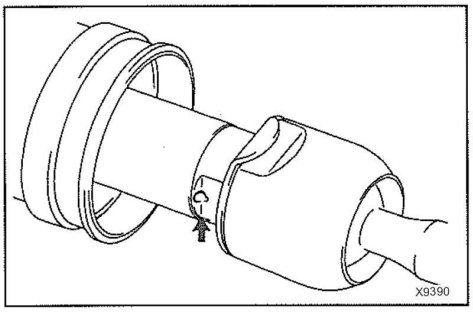

13 Assembling the steering gear dust cover

(1) Wrap protective tape around the serrations.

(2) Fill the locations shown in the figure with MP grease No.2. (3) Assemble the dust cover to the control valve housing.

14 Steering rack end (RH and LH) assembly (1) Align the claw of the new claw washer with the notch in the rack end.

Assemble them together.

(2) Temporarily attach the rack end. (3) Tighten the rack end using a spanner (22mm) and SST.

S S T 09922-10010

注意 - Do not use the wrong direction of SST.

· Securely fix the steering rack with a spanner.

(4) Gently secure the rack end ball joint in a vise.

注意 Do not tighten the vise too tightly. (5) Caulk the claw washer using a brass bar.

注意 Do not apply shock to the steering rack.

15 Steering rack ventilation hole inspection

(1) Insert a wire (medium 2mm) approximately 30mm into the ventilation hole of the steering rack and check that there is no blockage.

〈参考〉 The ventilation holes in the steering rack equalize the pressure in the left and right rack boots. If the ventilation holes are clogged, the pressure inside the boot will change when you turn the handle, potentially deforming or damaging the boot.

16 Steering rack boots No. 1 and No. 2 assembly

(1) Apply silicone grease to the inside of the small diameter of the rack boots. (2) Screw rack boots No. 1 and No. 2 through the boot clamps Assemble it so that it does not come off. (3) Assemble the clamp.

(4) Using SST, check that the rack boot expands and contracts smoothly when the control valve shaft is rotated.

SST 09616-00010

17 Tie rod end (RH and LH) assembly

(1) Screw the lock nut and tie rod end to the alignment mark on the rack end, and tighten the lock nut.

<Reference> Perform final tightening after toe-in adjustment. 18 Steering gear ASSY fixing SST removal

19 Left and right turn pressure tube assembly

(1) Using SST, assemble the two pressure tubes.

S S T 09633-00020

20 Steering gear ASSY installation

注意 When connecting the steering gear and intermediate shaft, temporarily tighten the bolts on the intermediate shaft side, tighten the steering gear side, and then tighten the intermediate shaft side.

13

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T0048172

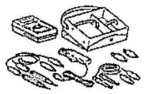
power steering

electrical control

(New PPS)

supplies

soup bowl

	09082-00012	toyota electrical tester	Each part is for use as a pointer.
	(09083-00060)	mini test lead	For each part point school

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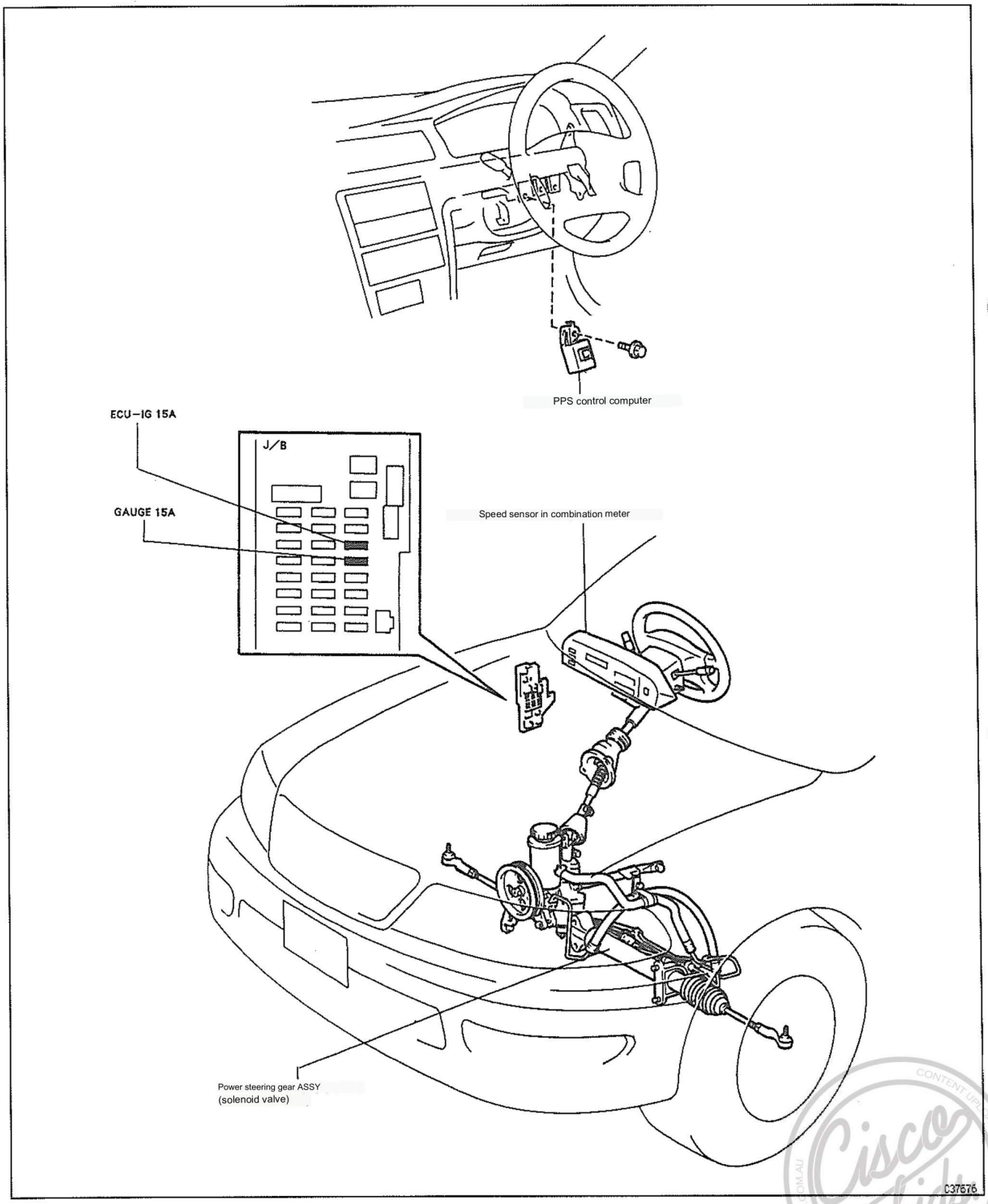
T0048174

Parts layout diagram



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T0048175

troubleshooting

How to proceed with troubleshooting

1 Pre-inspection

(1) Perform a preliminary inspection and confirm any malfunctions.

(2) Check the battery voltage.

Standard value: 10~14V (engine stopped) (3) If the steering torque is large, check the following items. ① Tire size and air pressure ② Oil reservoir fluid level ③ Hydraulic pressure check ④ Front suspension related ⑤ Front wheel alignment

2 Failsafe function

failsafe situation		computer output	phenomenon
• solenoid valve internal · Power steering computer and solenoid valve	short to earth	None "SOL+ [SOL-"]	Provides a slightly heavier and constant power assist
	line cutoff	Yes	↑

JB3033

3 How to read the flowchart

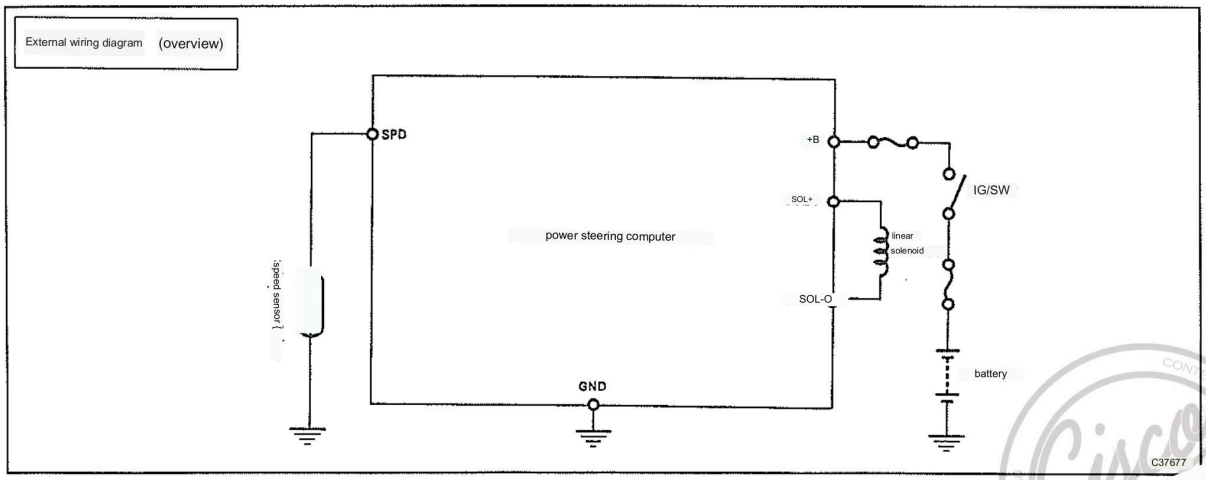
FEM For items that do not meet the conditions, check with the ignition switch ON or the computer connector connected.

⬡ • · · · · · · · Item to work on

▭ ...Items to be inspected ...Causes of failure

13

External wiring diagram (overview)



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1	Steering force is large when idling (stationary turning is heavy)

If it is operating as power steering (slightly power assisted), perform an inspection according to the flowchart.

If there is no power steering operation at all, check the hydraulic pressure. (See "Basic Inspection" and "Hydraulic Inspection")

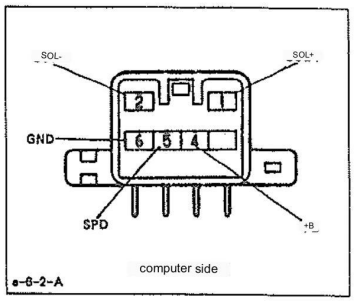
Is the solenoid normal?
("troubleshooting" -Refer to "Individual inspection")

NO. → Defective solenoid

YES

Remove the P/S computer (leave the connector connected)

Turn on the ignition switch



P/S Computer SOL - Terminal Voltage between GND terminals
Is it within the standard value? 0.15~0.20V

YES → Hydraulic system failure

NO.

Voltage between P/S computer +B ↔ terminal and body ground
Is it 10~14V?

NO. → P/S computer Defective power supply circuit (wire harness, fuse, fusible link)

YES

Turn off the ignition switch

Disconnect the P/S computer connector

13

P/S computer vehicle W/H side connector GND end
Is the wiring between the child and body ground normal?

NO. → Defective ground wiring for P/S computer

YES

P/S computer vehicle W/H side connector SOL+
↔ Resistance between SOL- terminal is 6~11Ω

NO. → Defective wiring between P/S computer and solenoid valve

YES

P/S computer failure

JE0131
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2	Steering force does not increase even when vehicle speed increases

Is the stationary steering force large when idling? (Refer to "Basic Inspection" - "Stationary Steering Torque Inspection")

YES → Check the chart

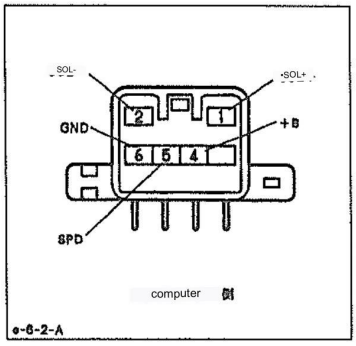
NO.

Is the solenoid valve normal? (Refer to "Troubleshooting" - "Individual inspection")

NO. → Defective solenoid valve

YES

Set the vehicle on the speedometer tester and remove the P/S computer (leave the connector connected)



While driving, the voltage between the P/S computer, SPD terminal, body, and ground is 1.5V or less ~ 4.5V or more. Is it a return?

NO. → Disconnect the P/S computer and combination meter connectors (see ``Electrical" - ``Meters & Gauges")

YES

Is the speed sensor normal? (See "Electrical" - "Meters & Gauges")

NO. → Bad speed sensor

YES

P/S computer SOL-2 terminal GND ⑥ 端子 Is the voltage between

Standards

vehicle speed	Densho
Okm/h	0.33~0.43V
100km/h	Densho above Negative 0.08~0.20V (Grande series) 0.09~0.21V (Tourer series)

The wiring between the P/S computer and the combination meter is Normal. (operation (see "Electrical" - "Meter & Gauge")

NO. → /P/S Wiring failure between computer and combination meter

YES

NO. → P/S computer failure

YES

Defective solenoid valve

13

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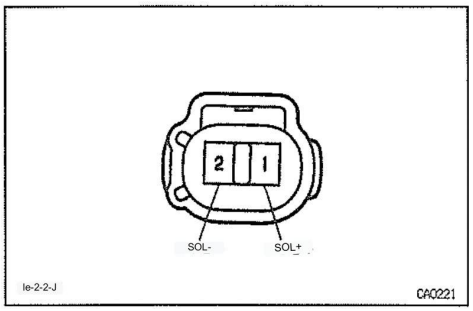
Conveyance box

T0046178



Individual inspection

steering gear solenoid valve

1 Steering gear solenoid valve inspection

(1) Disconnect the solenoid valve connector.

(2) Measure the resistance between connector terminals.

Reference value 7.4~8,0Ω (at 20°C)

(3) Measure the resistance between the solenoid valve case connector terminals. Reference value 1 MΩ or more

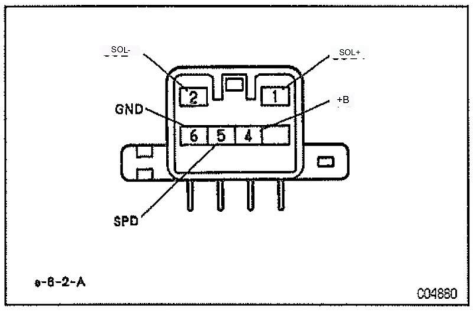
(4) Apply battery voltage to the solenoid valve and confirm that you can hear the valve operating.

<Reference> If the operating sound of the valve is difficult to hear, use a sound scope. use.

(5) Connect the solenoid valve connector.

speed sensor

(See "Electrical" - "Meter & Gauge")



power steering computer

1 Power steering computer inspection

(1) Measure the battery voltage. Standard value 10~14V (when engine is stopped)

(2) Set the vehicle on the speedometer tester. (3) With the computer connector connected, check the voltage and continuity between each terminal and body ground.

standard

13

ID	terminal number	input/output	item	Measurement condition	Standards	Faulty joints when outside standard values
1	SOL+	output	Hz	IG switch ON	Par lights up in Hz range	Steering gear solenoid valve
2	SOL-	output	Kansho	When idling	0.33 ~ 0.43V	Steering gear solenoid valve
				車 Salt at 100km/h (reference)	Voltage during idling - 0.08~0.20V (Grande series) 0.09~0.21V (tourer type)	
4	+B	input	電圧	IG switch ON	10 ~ 14V	Electronics-IG Fuse
5	SPD	input	Voltage	IG switch ON, drive slowly	1.5V or less 4,5V or more Pulse generation	speed sensor
6	GND	input	導通	常 Time	Continuity	body earth

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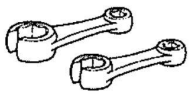
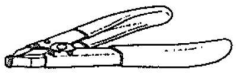
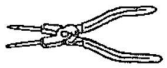
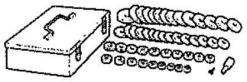
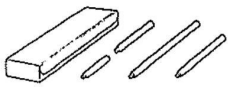
T0049475

vane pump

supplies

SST

				1G-FE	1JZ-GE 2JZ-GTE	2L-TE
	09608-04031	Front hub inner pairing cone replacer	For mounting With Pearly the pump shaft		○	
	09631-10030	oil seal remover	For removing vane pump housing oil seal		○	
	09631-22020	power steering hose nut wrench set	For disconnecting and connecting pressure feed tubes	○		○
	09631-22040	Oil seal C remover	For assembling vane pump housing oil seal			○
	09905-00012	Snap Ring No.1 Expander *	For shaft snap ring removal and installation.		○	○
	09905-00013	Snap ring pliers *	Abuse of each snap ring		○	○
	09950-60010	Ribracer set				
	(09951-00330)	Replacer 33 *	For assembling vane pump housing oil seal	○	○	
	09950-70010	Handle set				
	(09951-07100)	handle 100	For assembling vane pump housing oil seal	○	○	○
	09960-10010	variable pin wrench set				
	(09962-01000)	variable pin wrench arm ASSY *	Vane pump pulley removal and removal	○	○	

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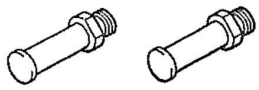	(09963-01000) Pin 10		Vane pump pulley removal and removal	○	○
tool					
Spanner 22×24mm	10403		Pressure port union fixed for		○
reverse tap	11801		For union sheet removal	○	
plastic hammer	12101		Vane pump shaft removal and for assembly	○	○
計器					
Torque wrench [0~3N· m {0~30kgf· cm}]	20114		For pump shaft preload measurement	○	○
Caliper (0~200mm)	20201		compression spring freedom For length measurement	○	○
Micrometer (0~25, 25~50, 50~75, 75~100mm)	20304		Vane pump shaft outer diameter and For pump plate measurement	○	○
Caliper gauge (10~34mm)	22402		Inside the vane pump housing bush	○	○
Sickness Gauge 09852-00040	24002		Gap between pump plate and rotor For inter-point rods		○
Oils and fats Others					
Toyota genuine MP grease No. 2	30204		For oil seal lip application	○	○
Toyota genuine power steering fluid	30803		For fluid replenishment and various parts application	○	○
protective tape	53501		Pump shaft threads and struts For rate pin protection	○	

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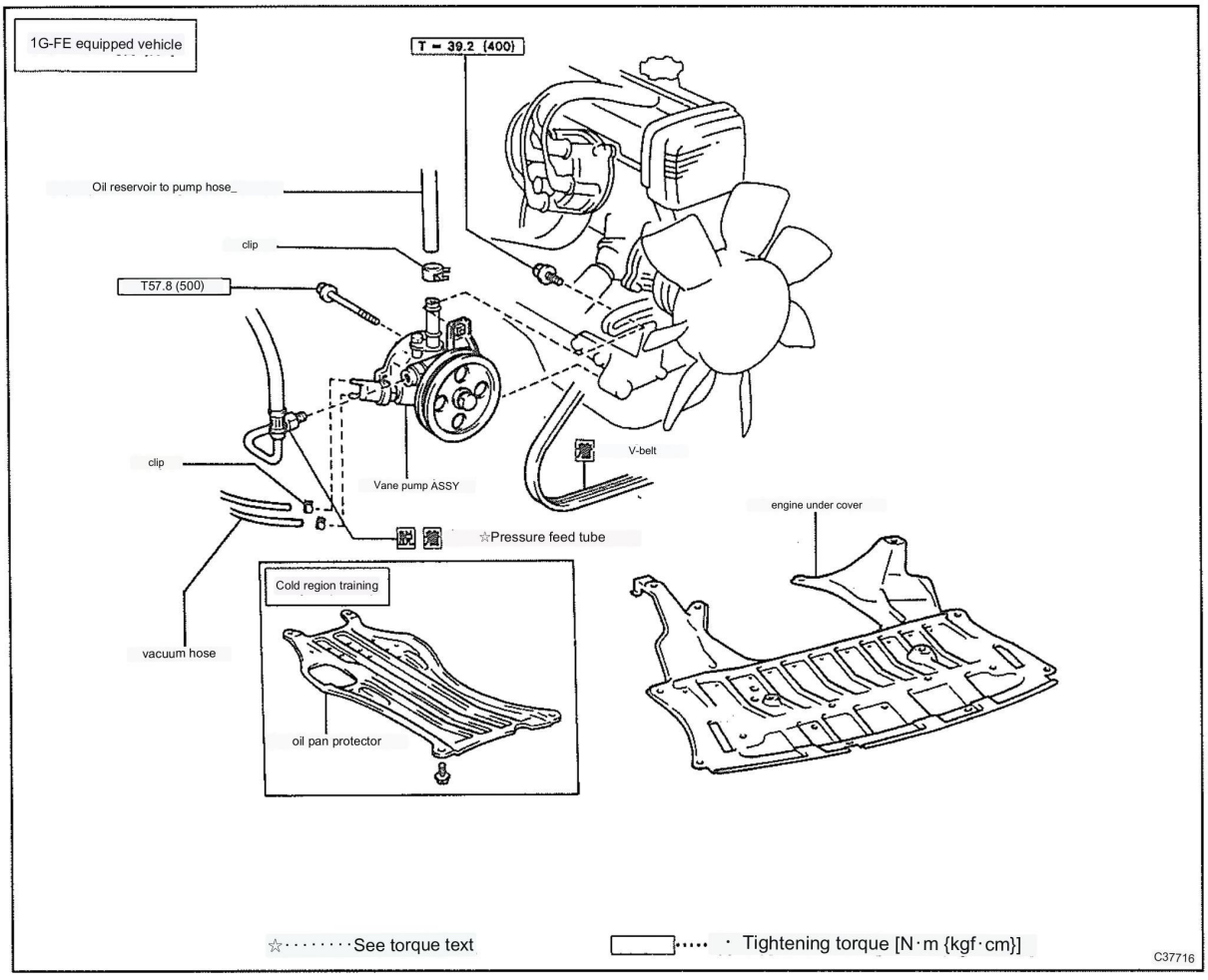
T0045478

Vane pump (vehicles equipped with 1G-FE)

De-appetizer composition diagram



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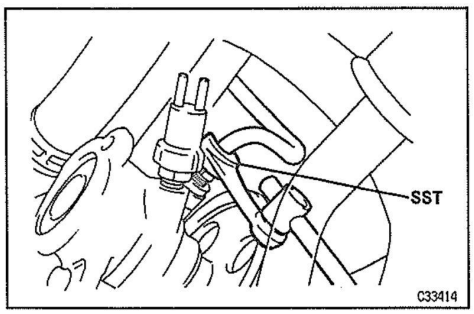
Points to note when installing and removing vane pump ASSY



1 Pressure feed tube disconnection and connection

(1) Disconnecting the pressure feed tube using SST, and make connections.

S S T 09631-22020

T=44.1N·m {450kgf·cm) (Specified tightening torque)

T'=35.7N·m {365kgf·cm} (Reading when using SST and torque wrench 460F)

fruit)

2 V ribbed belt installation and adjustment

("1G FE engine" "Engine adjustment" - "V belt tension/deflection adjustment type)

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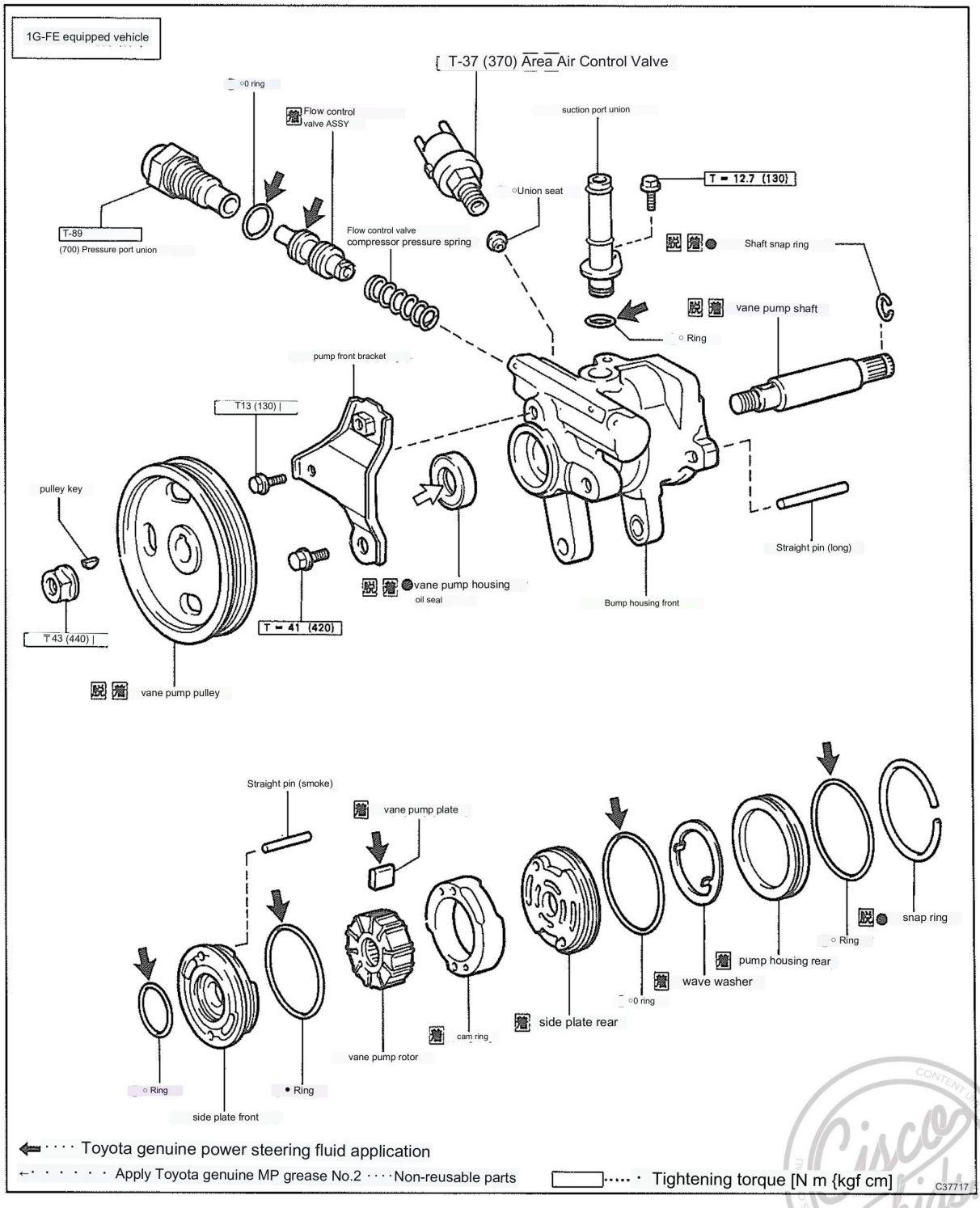
Exploded configuration diagram



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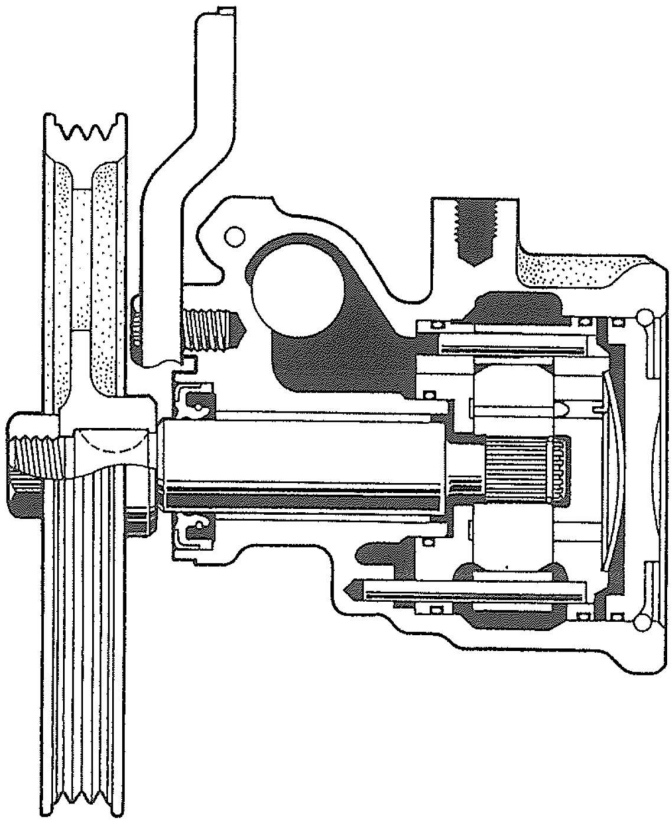
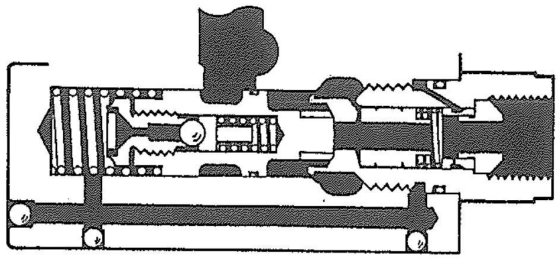
cross section

1G-FE equipped





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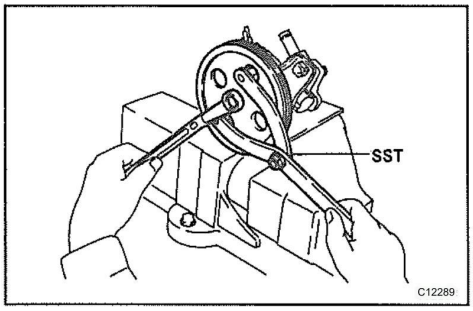


Points to note when disassembling vane pump ASSY

1 Remove vane pump pulley

(1) Use SST to secure the pulley and loosen the nut. SST

09962-01000 09963-01000

2 Removing the air control valve

注意 • The union seat is severely damaged and there is a risk of fluid leakage.

If so, replace the union sheet. otherwise remove

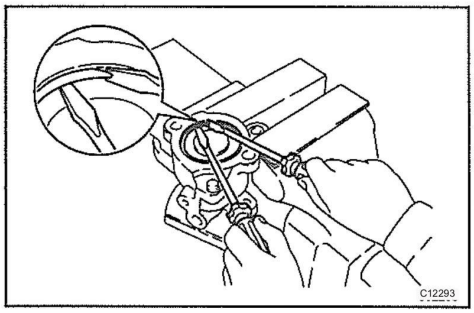
Don't take it off.

· If it is difficult to remove the union sheet, use a reverse tap.

do. Do not allow chips to enter the port at this

time.· If you have removed the union seat, use a new union seat.

Assemble the parts.



3 Removing the vane pump shaft

(1) Remove the snap ring using two screwdrivers.

〈参考〉 Raise the tapered end of the snap ring with one screwdriver, insert the other screwdriver between the snap ring and the rear of the housing, and remove the snap ring. (2) Wrap protective tape around the threaded part of the pump shaft.

(3) Use a plastic hammer to gently tap the tip of the pump shaft.

Remove it when it gets tired.

注意 Do not damage the oil seal lip inside the pump housing.

4 Vane pump shaft disassembly

(1) Using a thin blade screwdriver, remove the shaft snap ring.

Remove.

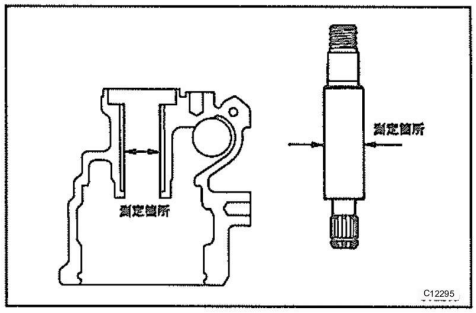
5 Vane pump housing oil seal removal

(1) Use a screwdriver to remove the oil seal. Drag

注意 the pump housing with a cloth to avoid damaging it.

13

Vane pump ASSY component inspection and replacement



1 Vane pump shaft and vane pump housing bushing

Ile clearance check

(1) Use a micrometer and caliper gauge to measure each dimension and calculate the oil clearance.

Standard value 0.01~0.03mm (standard value = bushing inner diameter - shaft outer diameter) Limit 0.07mm or less

If limits are exceeded, replace vane pump shaft and pump housing front.

steamed noodles
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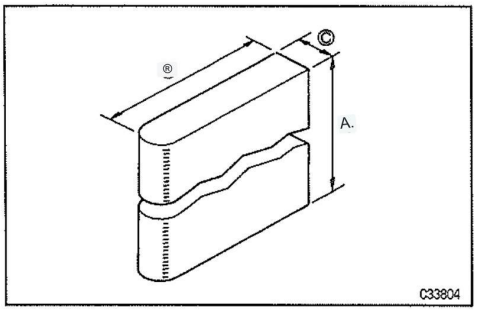
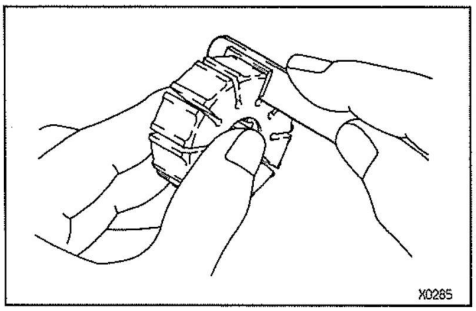


2 Vane pump plate and vane pump rotor inspection

(1) Use a micrometer to measure each dimension of the pump plate.

do.

Measurement points	Limit [mm]
A.	14.988
Ⓑ	8.1
(C.)	1.797



(2) Using a thickness gauge, check the pump plate and pump row.

Measure the gap between the turrets.

Standard height 0.02mm

Limit 0.03mm

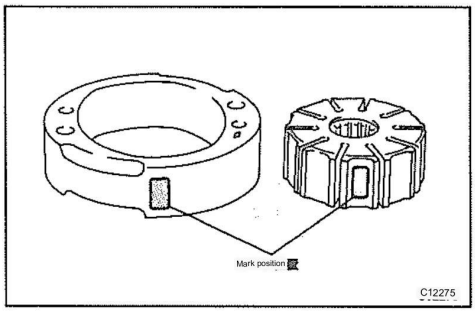
If limits are exceeded, check the pump plate, pump rotor and cover.

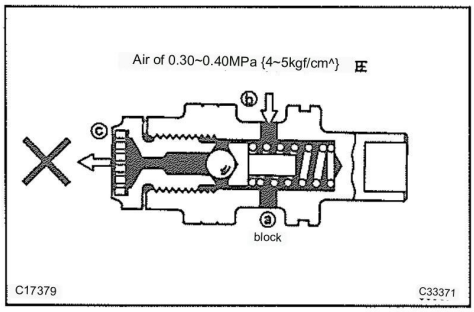
Replace the mulling.

<Reference> Use pump rotor and cam ring with the same mark.

For the pump plate, select the appropriate model number.

mark	Pump plate part number
none	44345-12010
1	44345-12020
2	44345-12030
3	44345-12040
4	44345-12050





3 Flow control valve ASSY inspection (1)

Check that there are no scratches on the valve and hole.

(2) Apply Castle power steering fluid to the valve.

(3) When inserting the valve into the housing, check that the valve sinks smoothly under its own weight.

(4) Check the airtightness of the valve.

① Cover the hole shown in the picture with your finger. ② Apply air pressure of 0.39 ~ 0.49MPa {4~5kgf/cm²) to the hole shown in the figure.

Ru.

③ Check that there is no air leak from the hole © in the figure. If there is a leak, replace the valve.

13

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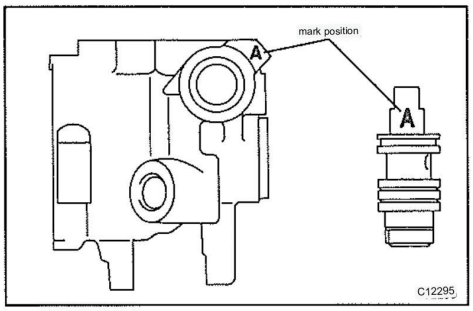


<reference> When replacing the valve, check the stamped mark on the pump housing and

Use valves with the same mark.

[Type of pulp]

mark	Valve part number
A.	44330-20010
B	44330-20020
C.	44330-20030
D.	44330-20040
E.	44330-20050
F	44330-20060

4 Flow control valve compression spring inspection

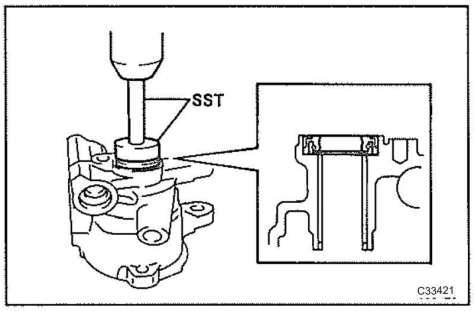
(1) Check the free length of the spring.

Standard 36.9mm

limit 36.0mm

5 Pressure port union inspection

(1) If the union seat is severely damaged and there is a risk of fluid leakage, replace it with the pressure port union ASSY.



Vane pump ASSY Precautions for assembly work

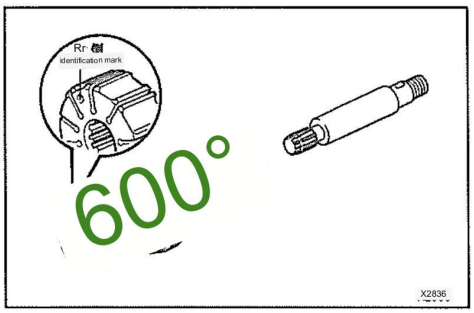
1 Vane pump housing oil seal assembly

(1) Using SST and press, attach the oil seal to the top of the housing.

Type until it matches.

SST 09951-00330 09951-07100

注意 Do not put the oil seal in the wrong direction.



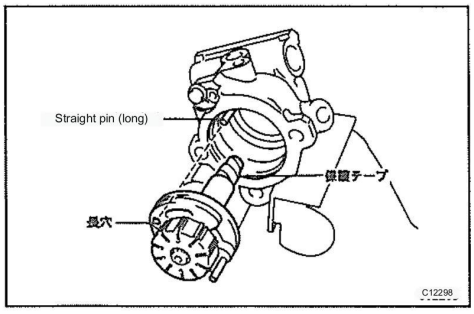
2 Vane pump shaft ASSY assembly

(1) Assemble the vane pump rotor to the vane pump shaft with the identification mark facing toward you.

注意 Make sure that the side plate front and vane pump rotor are in the correct direction.

(2) Using a thin blade screwdriver, remove the new shaft snap ring.

Assemble.



(3) Wrap protective tape around the threaded part of the vane pump shaft.

(4) Assemble the vane pump shaft ASSY to the pump housing by aligning the straight pin (long) with the elongated hole on the front of the side plate.

Let's go.

Note: 注 Do not damage the oil seal lip of the pump housing.

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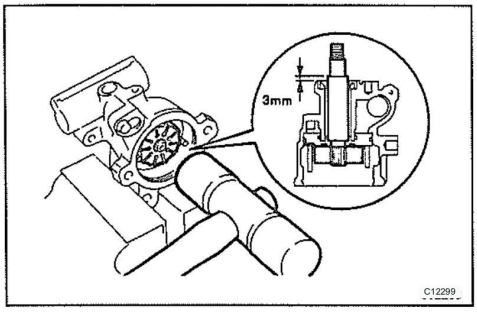
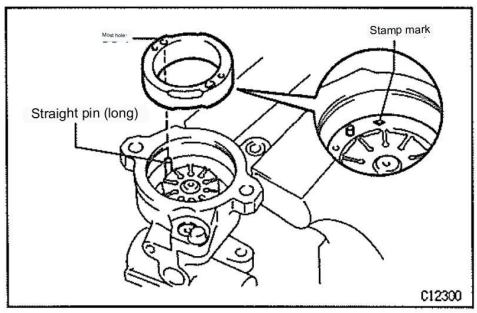


(5) Gently tap the vane pump shaft ASSY with a plastic hammer.
Usually assembled into the pump housing.·

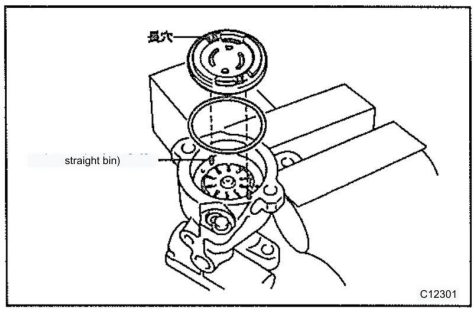
NOTE After assembling the shaft, make sure the oil seal lip is not turned over.
Make sure that
· The installation depth of the vane pump shaft ASSY is shown in the figure.



3 ring assembly
(1) Assemble the cam ring with the side with the stamp mark facing up, so that the straight pin (long) fits into the elongated hole.

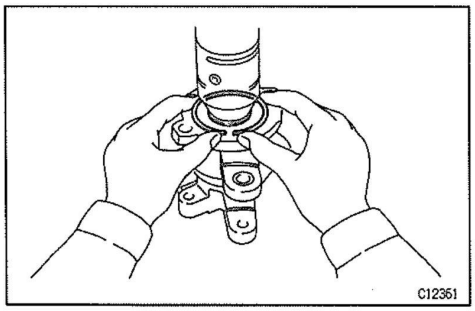
4 Vane pump plate assembly
(1) Assemble the 10 pump plates to the pump rotor with the rounded ends facing outward.

NOTE Do not install the pump plate in the wrong direction.



5 Side plate rear assembly
(1) Assemble the rear side plate so that the straight pin (long) fits into the long hole.

6 Assemble the wave washer
(1) Align the tabs of the wave washer with the recesses on the rear side plate and assemble.



7 Pump housing rear assembly
(1) Using SST, press fit the pump housing until the snap ring is assembled.

NOTE Press fit only until the wave washer shrinks, and do not press any further.
Do not press fit.

8 Vane pump shaft preload inspection
(1) Check that the pump shaft rotates smoothly and there is no abnormal noise.
(2) Temporarily attach the pulley mounting nut to the pump shaft.
(3) Measure the rotational torque of the pump shaft.

Standard 0.27N·m {2.8kgf·cm} or less (during rotation)

〈参考〉 If it is outside the standard value, check whether the oil seal lip has been reversed. Also, check if the assembly is correct.

9 Flow control valve ASSY assembly

NOTE Make sure the direction of the flow control valve is correct. 10 Air control valve assembly

NOTE If the union sheet has been removed, install a new union sheet.

11 Vane pump pulley assembly

NOTE Place the convex part of the pulley on the vane pump side. (1) Using SST, fix the pulley and tighten the nut.

SST 09962-01000 09963-01000

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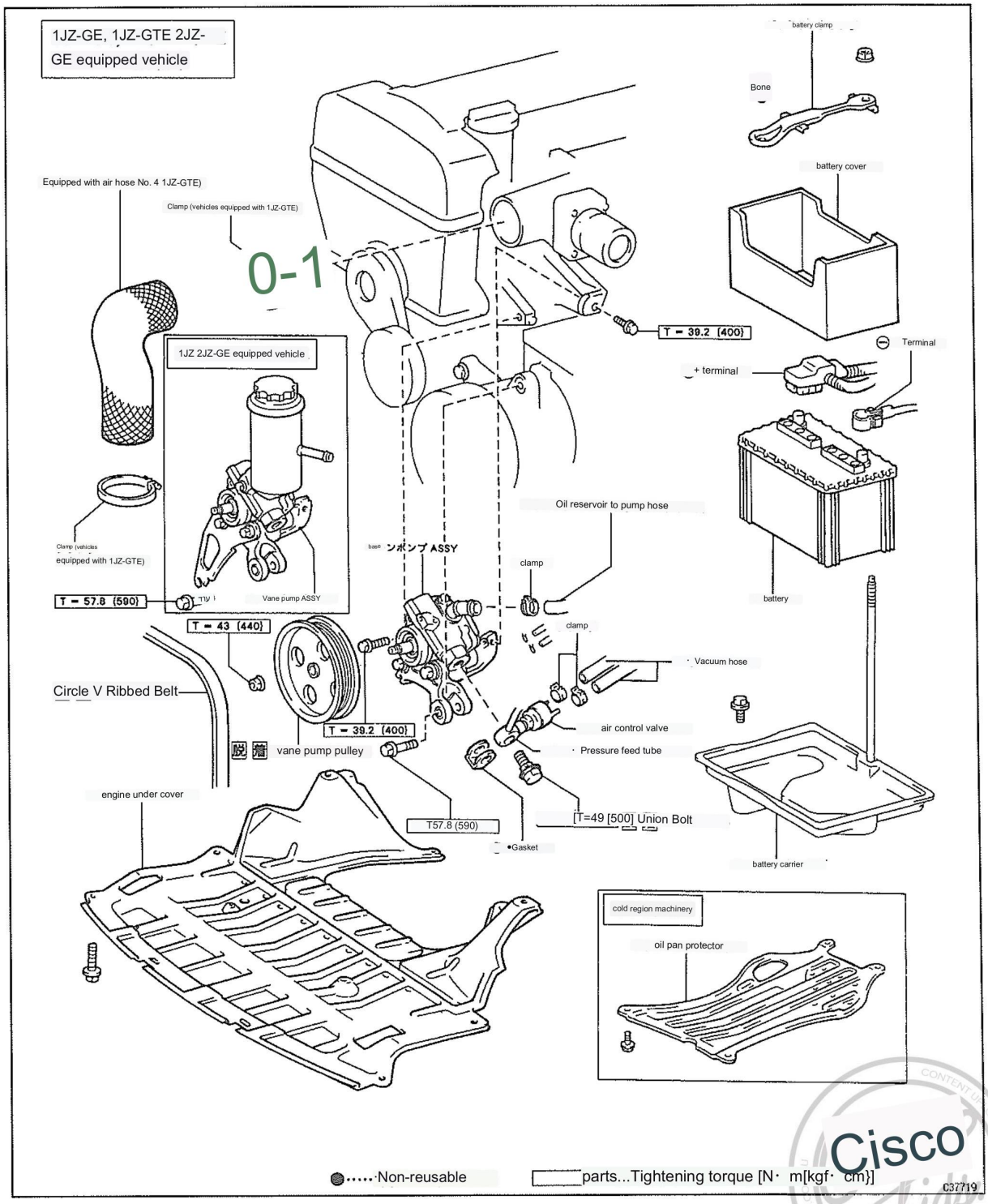
Vane pump (vehicles equipped with 1JZ-GE, 1JZ-GTE, 2 JZ-GE)

Detachment configuration diagram



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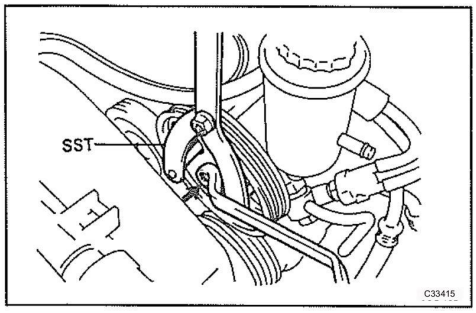

Points to note when installing and removing vane pump ASSY

1 V ribbed belt removal

(1) Hook the tool onto the tensioner pulley set bolt from the top of the vehicle, rotate the tensioner pulley to the right, and remove the belt. After removing the belt, the tensioner pulley will move the maximum amount to the left, so set the tool as far to the right as possible.

2 Vane pump pulley removal

(1) Using SST, remove the nut and remove the vane pump pulley.

Remove.

SST 09962-01000 09963-01000

3 Pressure feed tube disconnection and connection

(1) Secure the pressure port union using a wrench (24mm) and remove the union bolt.

4 Vane pump pulley installation

Place the convex part of the booley on the pump side. (1) Use SST to secure the pulley and tighten the nut.

S S T 09962-01000 09963-01000

5 V-ribbed belt installation

(1) Hang the belt on something other than the A/C compressor pulley. Hook the back side of the belt onto the tensioner pulley.

(2) Hook the tool onto the tensioner pulley set bolt and rotate the tensioner to the left to loosen the belt.

(3) In condition (2), hang the belt on the A/C compressor pulley.

Make sure that the belt is properly attached to each pulley.

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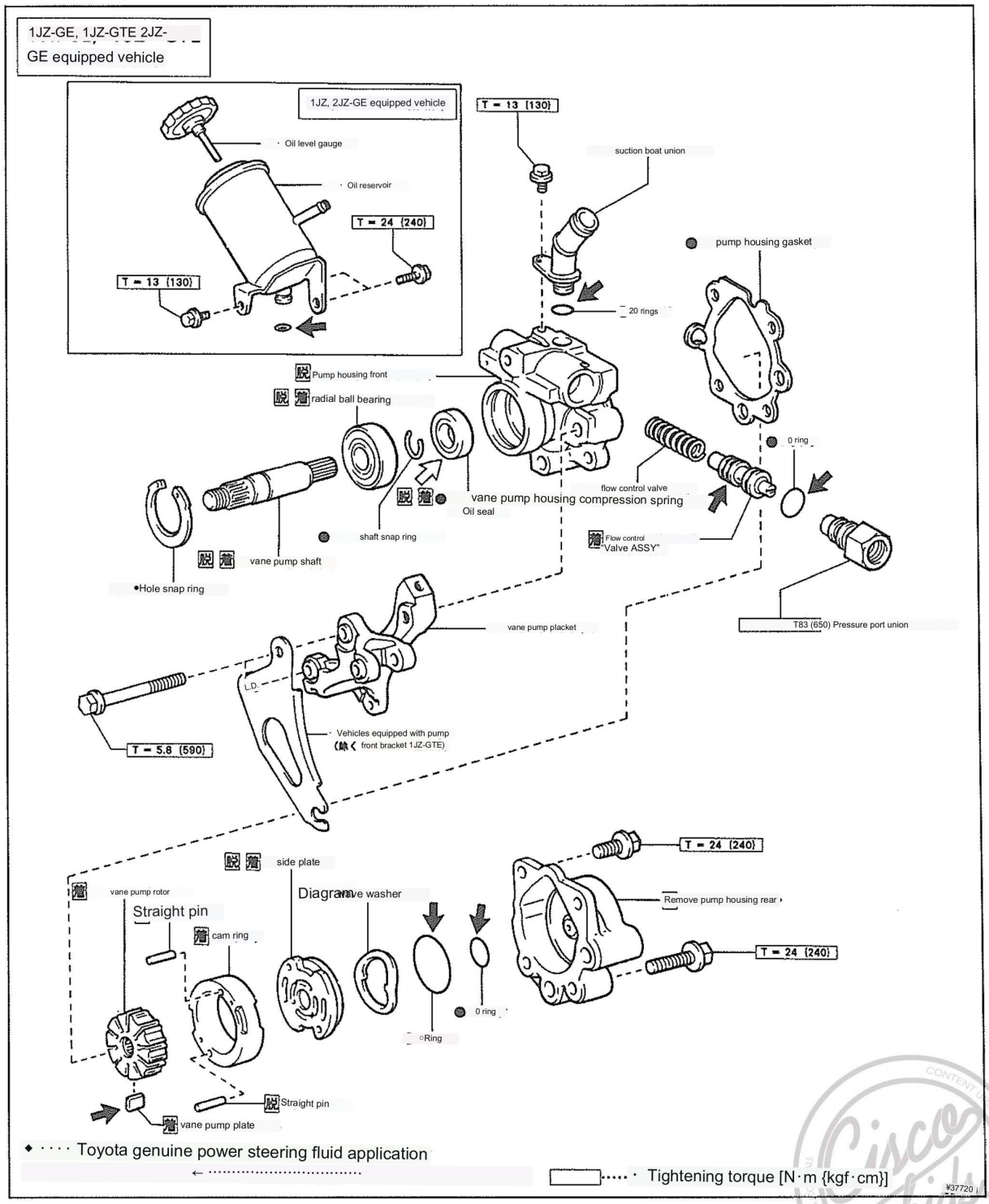
Exploded configuration diagram



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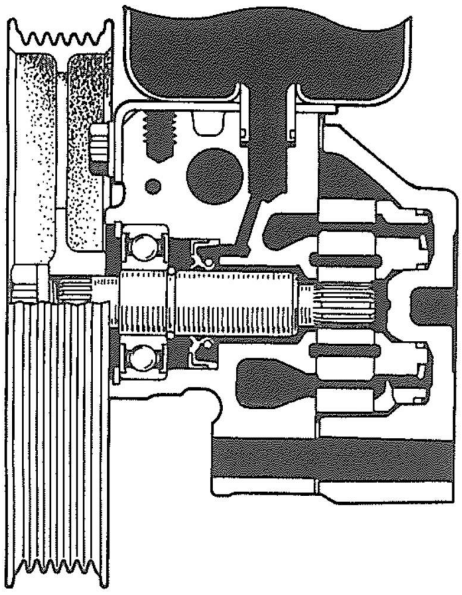
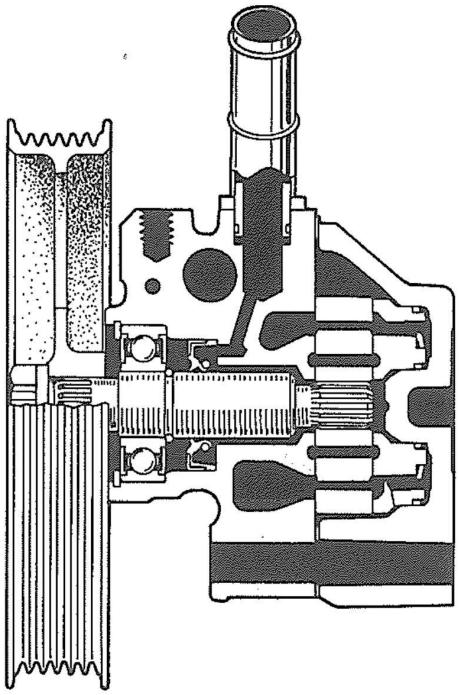
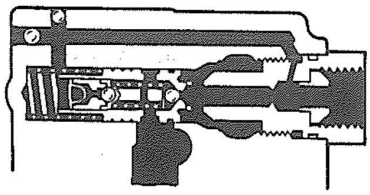
cross section

1JZ, 2JZ-GE equipped vehicle



1JZ-GTE equipped vehicle





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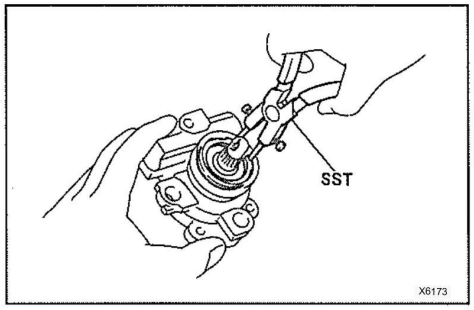

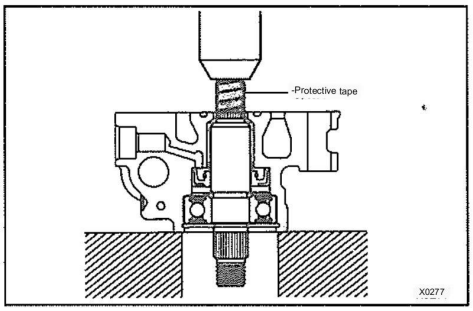

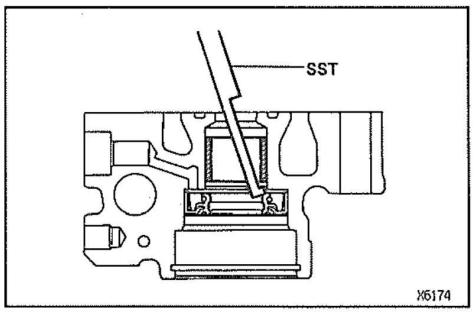

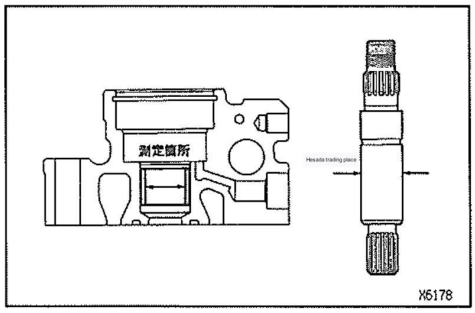

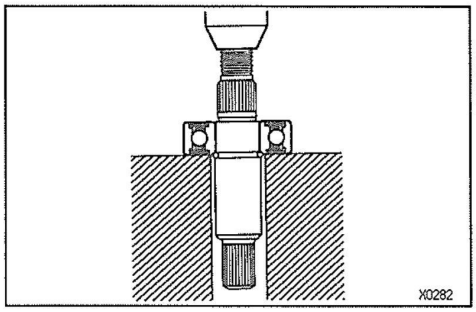

Points to note when disassembling vane pump ASSY

1 Pump housing front and rear separation

(*) If it cannot be separated, use a plastic hammer to pop it.

Tap the housing.

2 Remove straight pin (1)

Using pliers wrapped with protective tape, remove straight pin 2

Remove the book.

3 Removing the hole snap ring

(1) Remove the hole snap ring using SST.

S S T 09905-00013

4 Removing the vane pump shaft with bearing

(1) Wrap protective tape around the rear serrations of the shaft. (2) Using a press, vane pump shaft with bearing Remove the

5 Removing the wave washer and side plate (1) Using a plastic hammer, tap the rear of the pump housing and remove the side plate and wave washer.

6 Vane pump housing oil seal removal S ST

(1) Remove the oil seal using SST.

09631-10030

注意 Does not damage the bushing.

Vane pump ASSY component inspection and replacement

1 Vane pump shaft and vane pump housing bushing

Ile clearance check

(1) Using a micrometer and caliper gauge, measure each dimension.

Measure and calculate the oil clearance.

Standard value 0.03~0.05mm (standard value = bushing inner diameter - shaft outer diameter) Limit 0.07mm or less

〈参考〉 If the limits are exceeded, the vane pump shaft and pump

Replace the Uzing front.

2 Vane pump shaft bearing replacement

(1) Use a press to remove the bearing.

注意 Do not drop the pump shaft.

(2) Using SST, remove the shaft snap ring. S ST

09905-00012 CONTE

注意 To replace the snap ring, replace the pump shaft and oil seal.

To protect the sliding parts of the pump, work on the front side of the pump shaft. (3) Assemble a new snap ring using SST.

S S T 09905-00012

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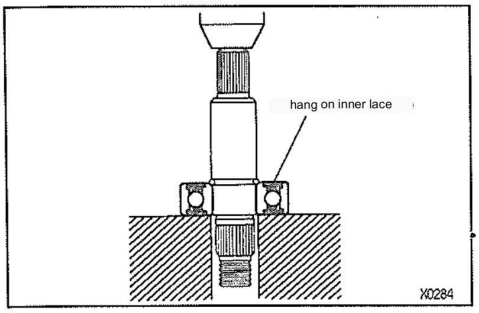


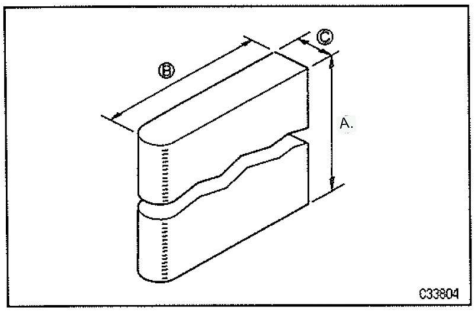
(4) Using a press, lightly touch the bearing to the snap ring.

Press in until the

-Does not damage the pump shaft.

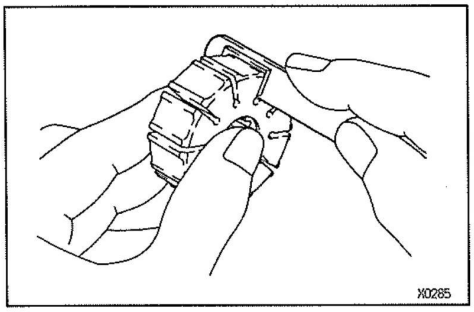
· There is no direction in pairing.

- Hang the workbench on the inner race of the bearing.



3 Vane pump rotor and plate inspection (1) Use a micrometer to inspect each dimension shown in the diagram.

Measurement point	limit[]
A.	14.991
B	8.6
C.	1.397



(2) Using a thickness gauge, check the pump plate and pump row.

Measure the gap between the turrets.

Standard height 0.02mm

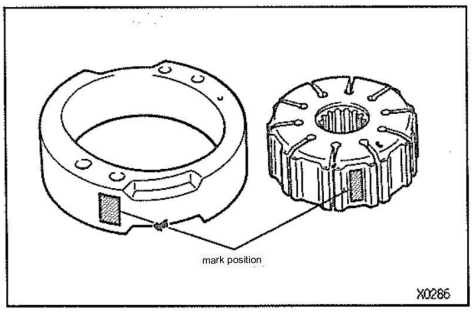
Limit 0.03mm

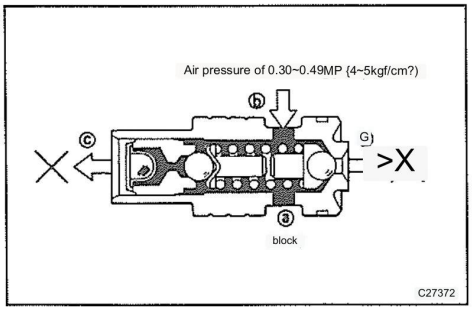
If the limit is exceeded, replace the pump plate, pump rotor and cam ring.

<Reference> Use the pump rotor and cam ring with the same mark.

Then, select the appropriate part number for the pump plate.

mark	Vane pump plate part number
none	44345-26010
1	44345-26020
2	44345-26030
3	44345-26040
4	44345-26050





4 Flow control valve ASSY inspection

(1) Inspect the valve and housing for damage.

(2) Apply Castle power steering fluid to the valve,

Check that the valve sinks smoothly under its own weight.

(3) Check the airtightness of the valve.

① Close the hole with your finger.

②Apply air pressure of 0.39~0.49MPa {4~5kgf/cm) to the hole.

③ Check that there is no air leakage from the hole ©. Ckids with

If so, replace the valve.

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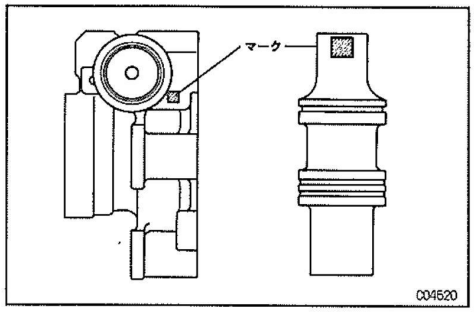


〈参考〉 When replacing the valve, check the stamped mark on the pump housing and Use valves with the same mark.

[Valve type]

mark	Valve part number
A	44330-28011
B	44330-28021
C	44330-28031
D	44330-28041
E	44330-28051
F	44330-28061

5 Flow control valve compression spring inspection

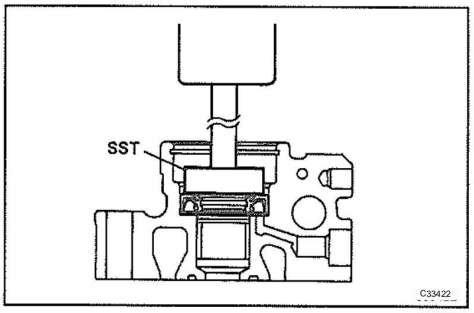
(1) Check the spring free length.

Standard height 33.24mm

limit **32.34mm**

6 Pressure port union inspection

(1) If the union seat is severely damaged and there is a risk of fluid leakage, replace it with the pressure port union ASSY.

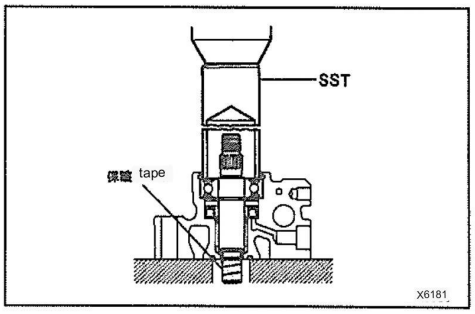


Vane pump ASSY Precautions for assembly work

1 Assembling the vane pump housing oil seal (1) Assemble the oil seal using SST and a press.

S S T 09951-00330 09951-07100

Do not make a mistake in the direction of the oil seal.



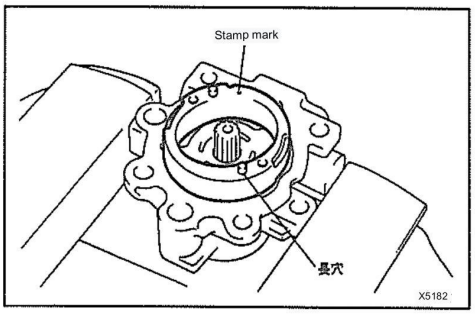
2 Vane pump shaft with bearing assembly (1) Wrap protective tape around the rear serrations of the shaft. (2) Using SST and press, shaft with bearing Assemble. S

ST 09608-04031

Do not damage the oil seal inside the pump housing.

(3) Assemble a new hole snap ring using SST. SST

09905-00013



3 Cam ring assembly

(1) Assemble the cam ring with the side with the stamped mark facing up, so that the straight pin fits into the elongated hole.

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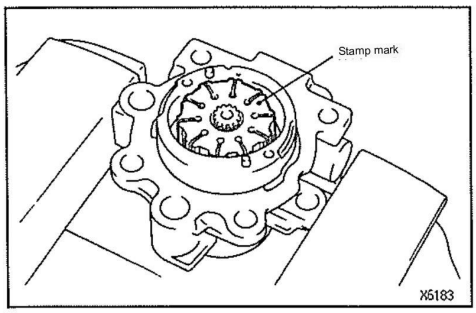


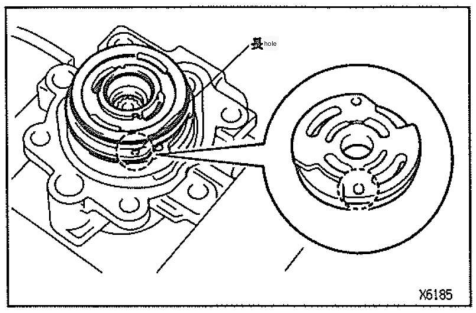
4 Vane pump rotor assembly

(1) Assemble the rotor with the side with the stamp marks facing up.

5 Assembling the vane pump plate

(1) Assemble the 10 pump plates with the round end facing outward.

Ru.



6 Side plate assembly

(1) Assemble the side plate so that the straight pin fits into the long hole.

Ru.

7 Assembling the wave washer

(1) Align the tab of the wave washer with the recess in the side plate.

Assemble.

8 Vane pump shaft rotation torque inspection

(1) Check that the pump shaft rotates smoothly and there are no abnormalities.

(2) Temporarily attach the pulley mounting nut to the pump shaft.

(3) Check the rotation torque of the pump shaft.

Reference value 0.24N· m (2.5kgf· cm) or less

〈参考〉 If it is outside the standard value, the oil seal lip is not reversed.

Check. Also, check if the assembly is correct.

9 Flow control valve ASSY Assembling Make sure

注意 to orient the flow control valve in the wrong direction.

13

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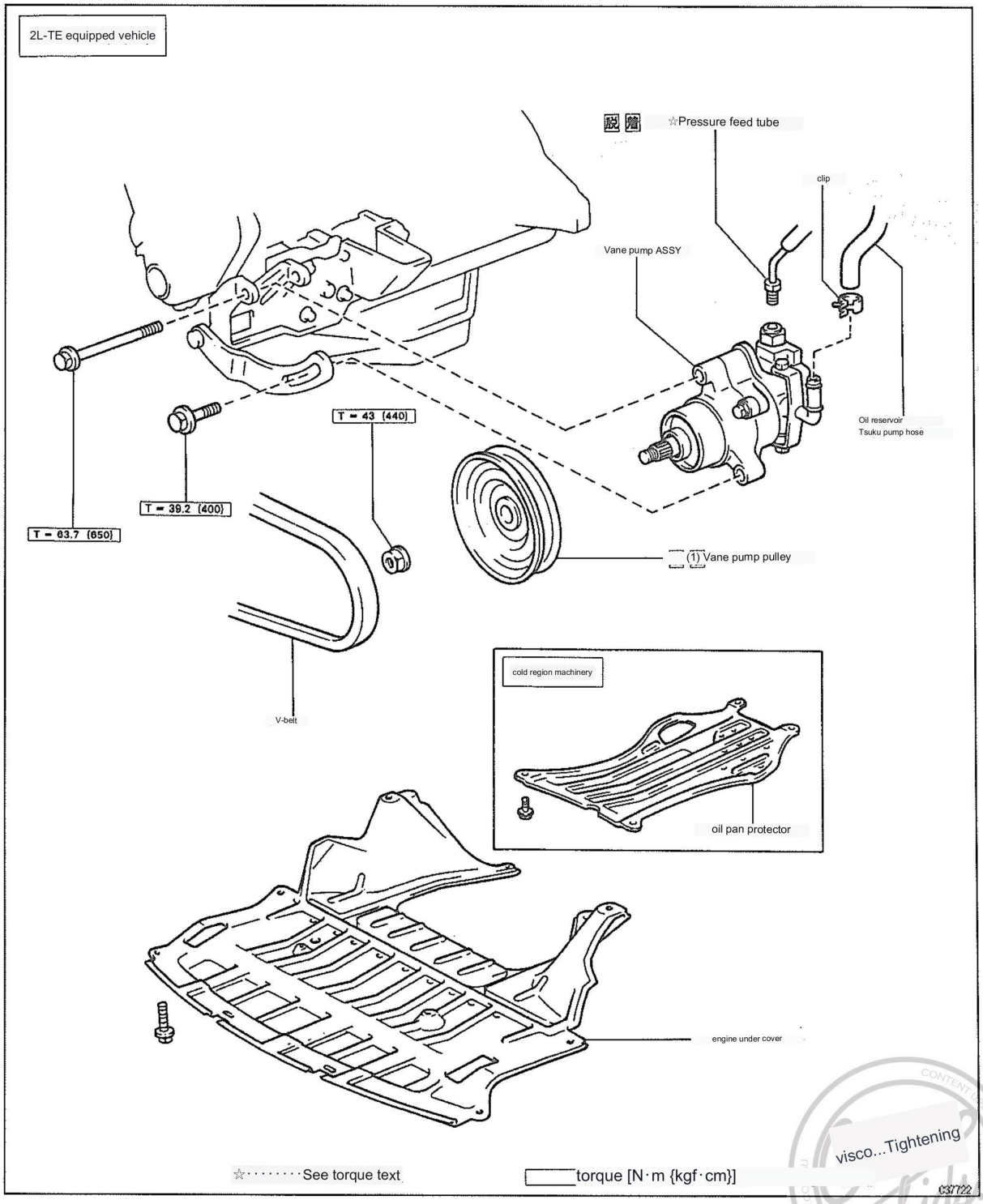
T0049460

Vane pump (vehicles equipped with 2L-TE)

Detachment configuration diagram



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visco...Tightening
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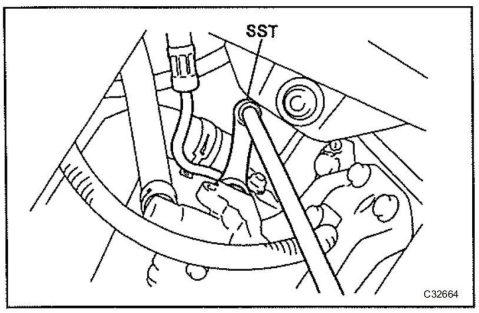

Points to note when installing and removing vane pump ASSY

1 Pressure feed tube disconnection and connection

(1) Using SST, disconnect the pressure feed tube, and make connections.

SST 09631-22020

T=44.1N·m {450kgf·cm) (specified tightening torque)

T'=35.7N·m {365kgf·cm) (Reading when using SST and torque wrench 460F fruit)

2 Removing the vane pump pulley (1)

Fix the crank pulley and remove the vane pump while pushing the V-belt.

Loosen the pump pulley nut.

3 V-belt installation and adjustment

("2L-TE engine" - "Engine adjustment"

— 「 V-belt tension/deflection 整」参照)

4 Installing the vane pump

pulley (1) Fix the crankshaft pulley and tighten the vane pump pulley nut while pushing the V-belt.

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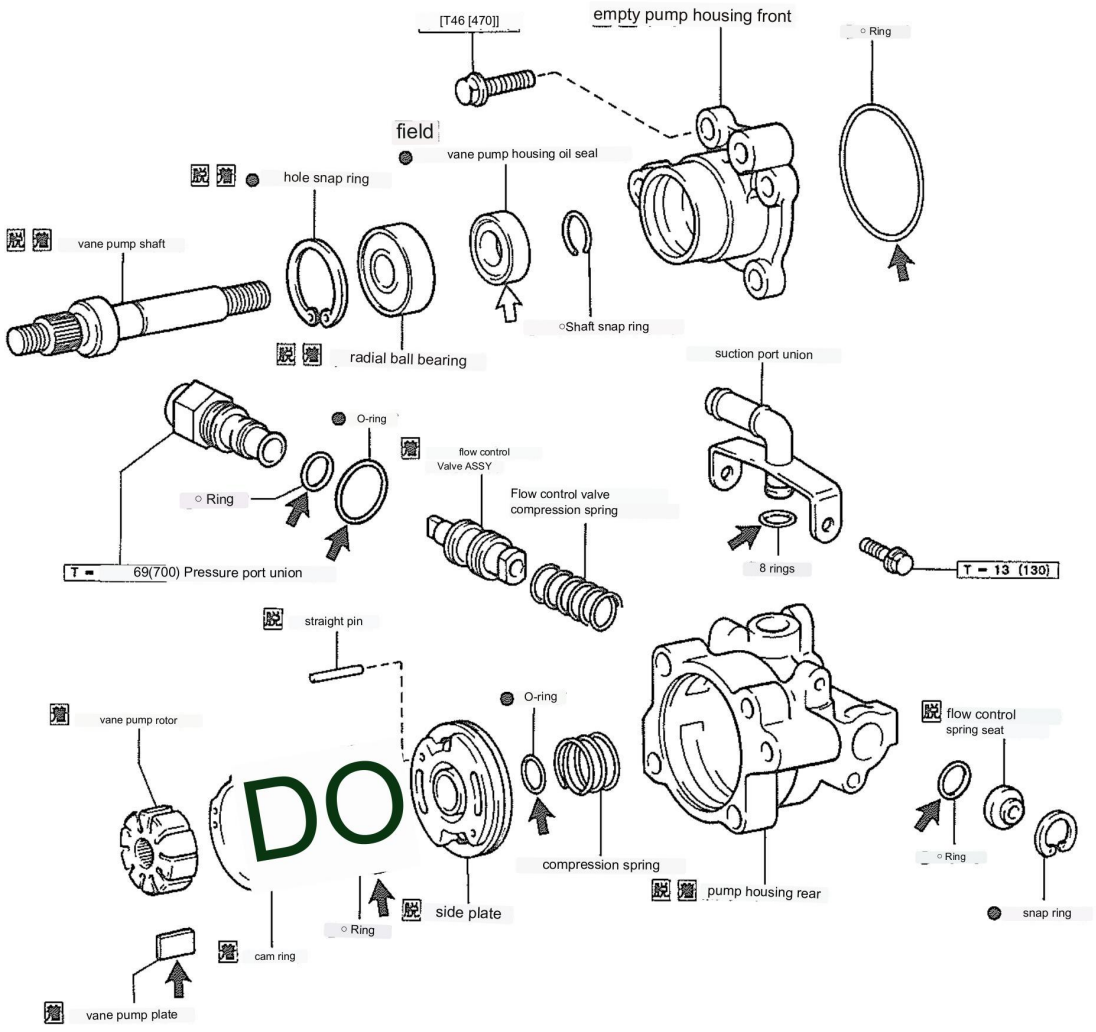
Exploded configuration diagram

2LTE equipped vehicle



⟸····· Toyota genuine power steering fluid application

← · · · · · · Apply Toyota genuine MP grease No.2 ·Non-reusable parts

▭····· · Tightening torque [N·m {kgf·cm}]

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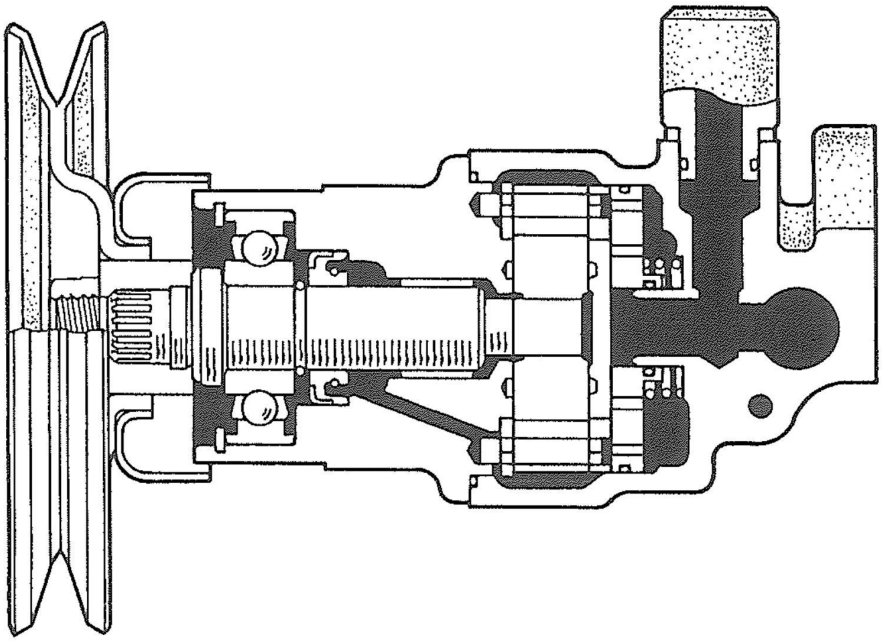
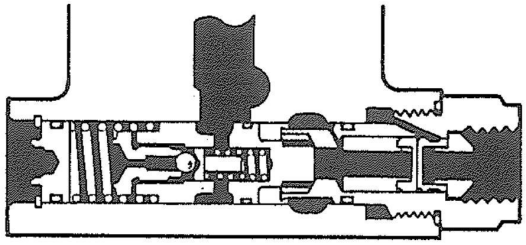
cross section

2L-TE equipped vehicle





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Points to note when disassembling vane pump ASSY

1 Pump housing front and rear separation

(1) Make alignment marks on the front and rear of the pump housing. Do not drop the pump rotor plate and cam ring after separating the pump housing.

〈参考〉 If the pump housing cannot be separated, use a plastic handle. Using a sharpener, tap the pump housing to separate it. 2 Using

a Removing the side plate and spring <Reference> If the side plate and spring cannot be removed, remove the side plate and spring. stick hammer, lightly tap the rear of the rear housing. Be careful not to damage the firewood, side plates, and springs. Remove it.

3 Remove straight pin

(1) Remove the two straight pins using pliers wrapped with protective tape.

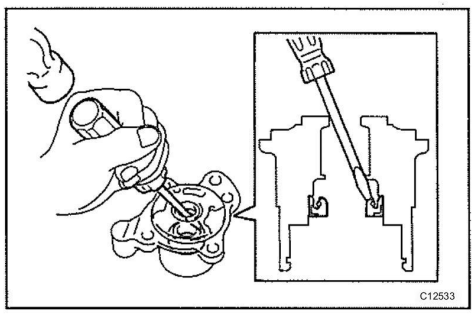
4 Vane pump shaft with bearing removal

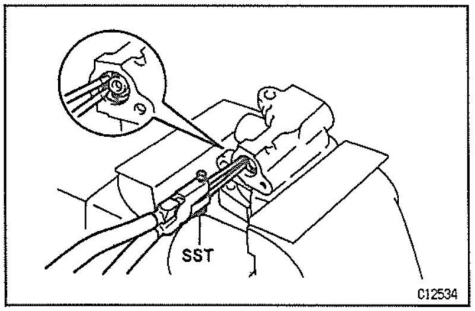
(1) Using SST, remove the hole snap ring. SST 09905-00013

(2) Using a plastic hammer, install the vane pump shaft Remove the is bearing.

5 Vane pump housing oil seal removal

(1) Use a screwdriver to remove the oil seal.





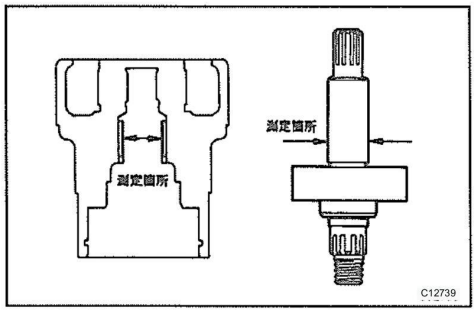
6 Flow control spring seat removal

(1) Remove the snap ring using SST.

SST 09905-00013

<Reference> It is easier to remove the spring seat by pushing it in a little and then removing the snap ring.

(2) Remove the spring seat using bolts (M6mm, pitch 1.0). Remove.



Vane pump ASSY component inspection and replacement

1 Inspect the clearance between the vane pump shaft and vane pump housing bush.

(1) Using a micrometer and caliper gauge, measure each dimension. Measure and calculate the oil clearance. CONTENT

Standards (Reference value = Bush inner diameter - Shaft outer diameter)

Limit 0.07mm

<Reference> If the limit is exceeded, replace the vane pump shaft and pump housing front.

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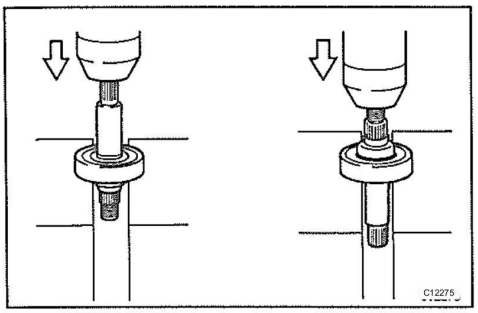


2 Vane pump shaft bearing replacement

(1) Using SST, remove the shaft snap ring. SST

09905-00012

(2) Use a press to remove the bearing.

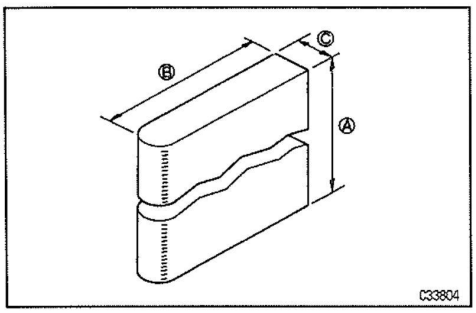
(3) Assemble the new bearing using a press.

〈注意〉 Vane pump shaft oil seal and needle roller

Do not damage the bearing contact area.

(4) Install a new shaft snap ring using SST.

S S T 09905-00012

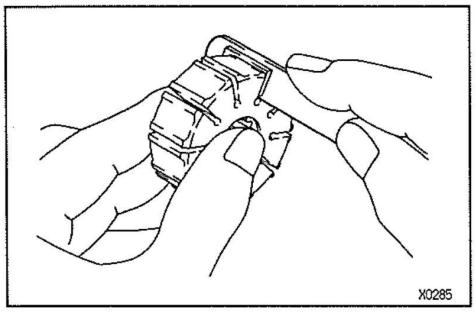


3 Vane pump rotor and plate inspection

(1) Using a micrometer, measure each dimension of the pump plate

do.

Measurement points	Limit [mm]
A.	14.988
Ⓑ	8.1
C.	1.797



(2) Using a thickness gauge, check the pump plate and pump row.

Measure the clearance between the rotor and the rotor.

Standards **0.02㎜**

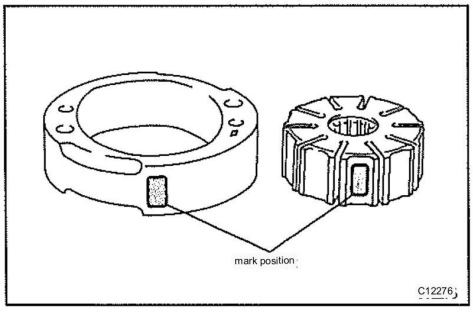
Limit 0.03mm

If the limits are exceeded, check the pump plate, pump rotor and cover.

Replace the mulling.

〈参考〉 Use the pump rotor and cam ring with the same mark.

For the pump plate, select the appropriate model number.



mark	Pump plate part number
none	44345-12010
1	44345-12020
2	44345-12030
3	44345-12040
4	44345-12050

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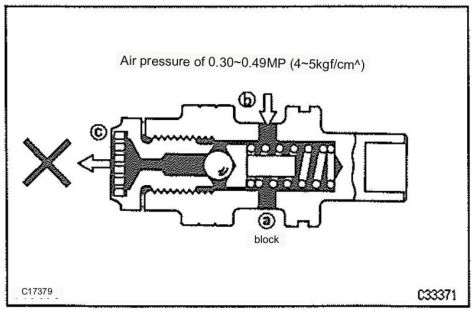

4 Flow control valve ASSY inspection

(1) Check that there are no scratches on the valve

and hole. (2) Apply Castle power steering fluid to the valve.

(3) When inserting the valve into the housing, check that the valve sinks

smoothly under its own weight.

(4) Check the airtightness of the valve.

① Cover the hole shown in the diagram with your finger.

Apply air pressure of 0.39~0.49MPa {4~5kgf/cm} to the hole shown in the figure.

Ru.

③ Check that there is no air leakage from the hole © in the figure. leak

If so, replace the valve.

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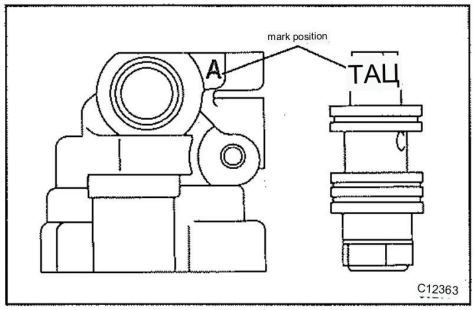


〈参考〉 When replacing the valve, check the stamped mark on the pump housing. Use valves with the same mark.

[Type of pulp]

mark	Pulp product number
A	44330-12131
B	44330-12141
C	44330-12151
D	44330-12161
E	44330-12171
F	44330-12181

5 Flow control valve compression spring inspection (1)

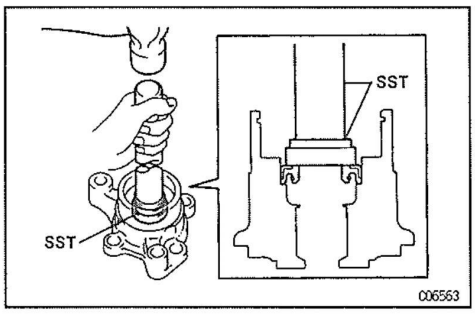
Measure the free length of the spring.

Standard berth 36.9mm

Limit 36.0mm

6 Pressure port union inspection

(1) If the union seat is severely damaged and there is a risk of fluid leakage, replace it with the pressure boat union ASSY.



Vane pump ASSY Precautions for assembly work

1 Assembling the flow control spring seat

(1) Assemble a new snap ring using SST. S ST

09905-00013 2

Flow control valve ASSY assembly

注意 Make sure the direction of the flow control valve is

3 Vane pump housing oil seal assembly

(1) Assemble the oil seal using SST. SST

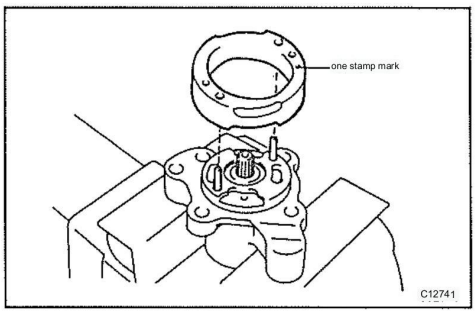
09631-22040 09951-07100

4 Vane pump shaft with bearing assembly

(1) Using a plastic hammer, vane pump shaft ウ Assemble the is bearing.

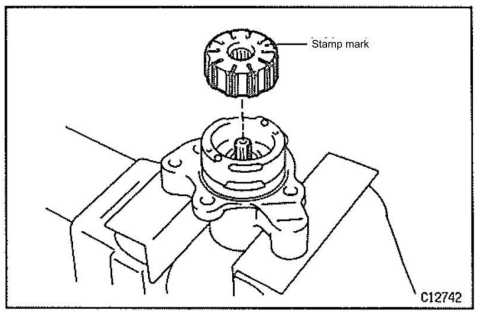
(2) Assemble a new hole snap ring using SST. SST

09905-00013



5 Cam ring assembly

(1) Assemble the cam ring with the side with the stamp mark facing up, aligning the large hole of the cam ring with the straight pin.



6 Vane pump rotor assembly

(1) Assemble the rotor with the side with the stamp marks

注意 facing up. Use the rotor set with the cam ring.

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7 Vane pump plate assembly

(1) Insert the 10 pump plates into the pump row with the round end facing outward.

Assemble it to the tar.

8 Pump housing front and rear assembly

(1) Align the alignment marks on the front and rear of the pump housing.

Ru.

9 Pump shaft preload measurement

(1) Check that the pump shaft rotates smoothly and there is no abnormal noise.

(2) Temporarily attach the pulley mounting nut to the pump shaft.

(3) Measure the rotational torque of the pump shaft.

Reference value 0.27N·m {2.8kgf·cm) or less (during rotation)

<Reference> If it is outside the standard value, check whether the oil seal lip has been reversed. Also, check if the assembly is correct.

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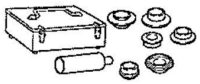
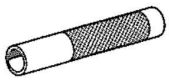
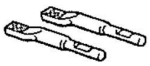
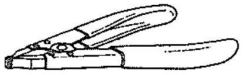
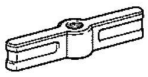
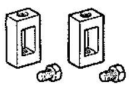
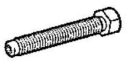
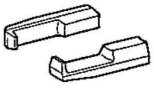
T0045376

★Steering column

supplies

SST

	09316-60011	Transmission & Transfer Pairing Replacer	
	(09316-00051)	Replacer D	For main shaft spring compression
	09612-22011	tilt handle bearing replacer	For main shaft bush assembly
	09904-00010	expander set	Snap ring removal and removal
	(09904-00020)	Crow No.1	Snap ring removal and removal
	09905-00012	Snap Ring No.1 Expander	Snap ring removal and removal (Tilt & Telescopic Steering Column)
	09950-40010	Blur B set	
	(09951-04010)	Hanger 150	For main shaft spring compression
	(09952-04010)	Slide arm	For main shaft spring compression
	(09953-04010)	Center bolt 100	For main shaft spring compression
	(09954-04010)	Arm 25	For main shaft spring compression
	(09955-04060)	Crow.6	For main shaft spring compression

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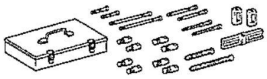
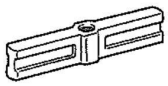
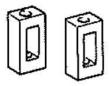
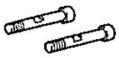
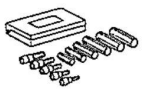
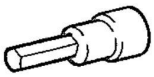
	09950-50010	Puller C set	
	(09951-05010)	Hanger 150	Steering wheel removal 用
	(09952-05010)	Slide arm	For steering wheel removal
	(09953-05020)	Center bolt 150	For steering wheel removal
	(09954-05020)	Crow No. 2	For steering wheel removal

tool

	09040-00010	hexagon wrench set	
	(09043-20060)	socket hexagon wrench 6	Tilt steering bolt removal and removal
Deep socket wrench (14mm)	10203		Steering column ASSY removal and removal
Drill	11201		For removing steering lock set bolt
reverse tap	11801		Steering lock set bolt removal 用
pin punch	56002		For removing tilt steering shaft No.2

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Oils and fats/others

Toyota genuine body grease W	31004	For applying to each part
Toyota genuine MP grease No. 2	30204	For applying to each part

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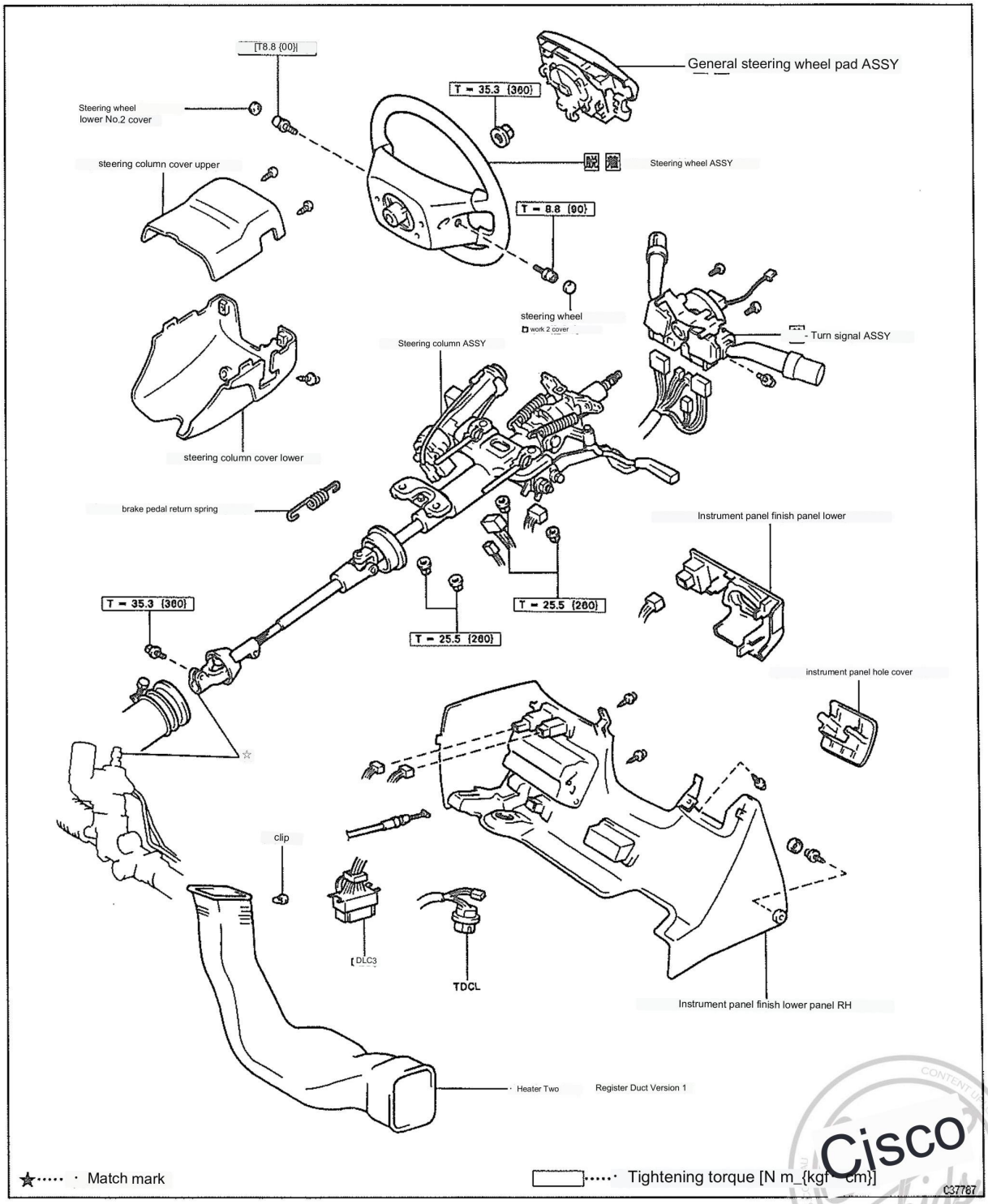
T0048377

★Steering column ASSY

★Composition diagram of leaving the feudal domain



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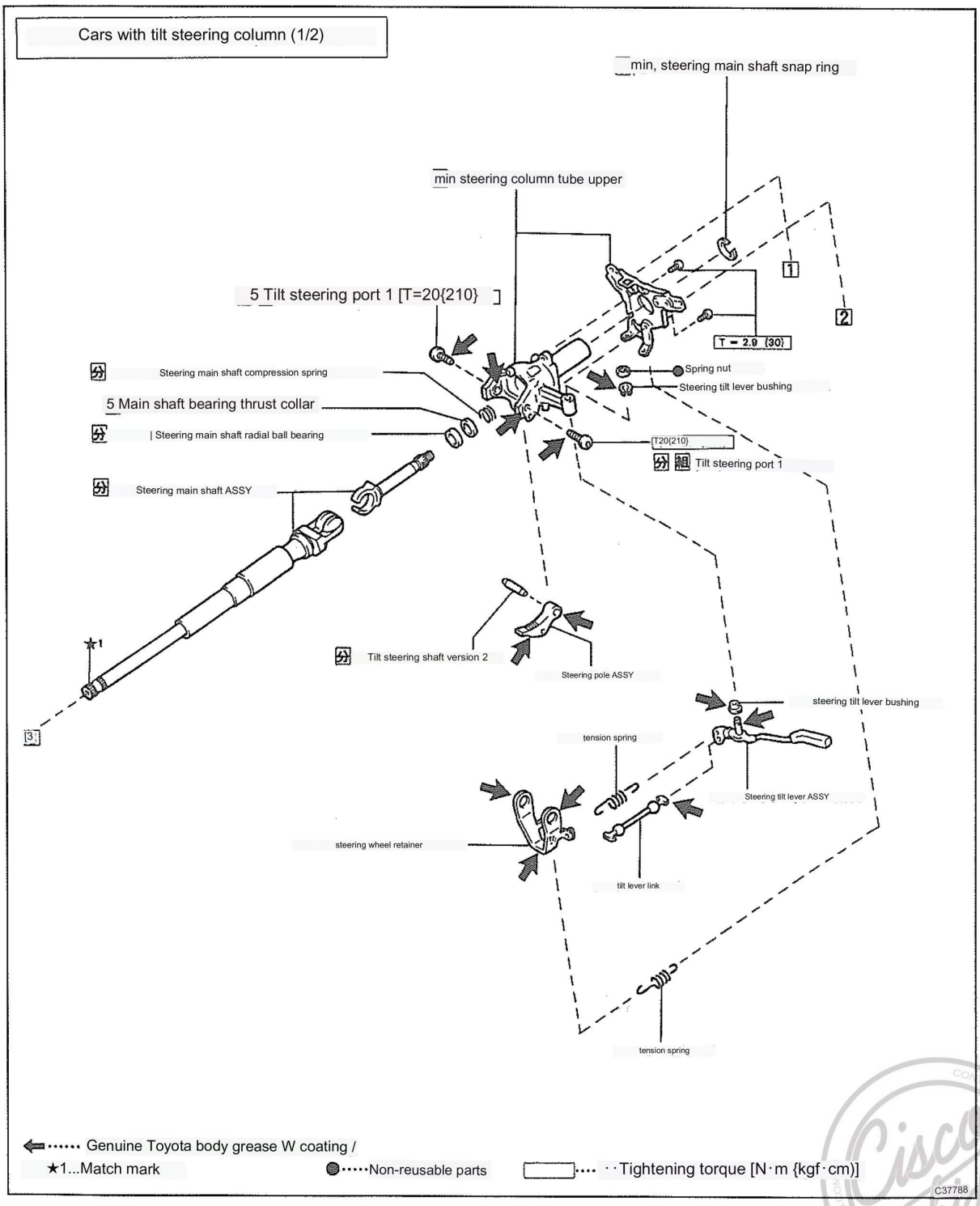
Exploded configuration diagram

Cars with tilt steering column (1/2)



Genuine Toyota body grease W coating /
★1...Match mark
Non-reusable parts
Tightening torque [N·m {kgf·cm}]

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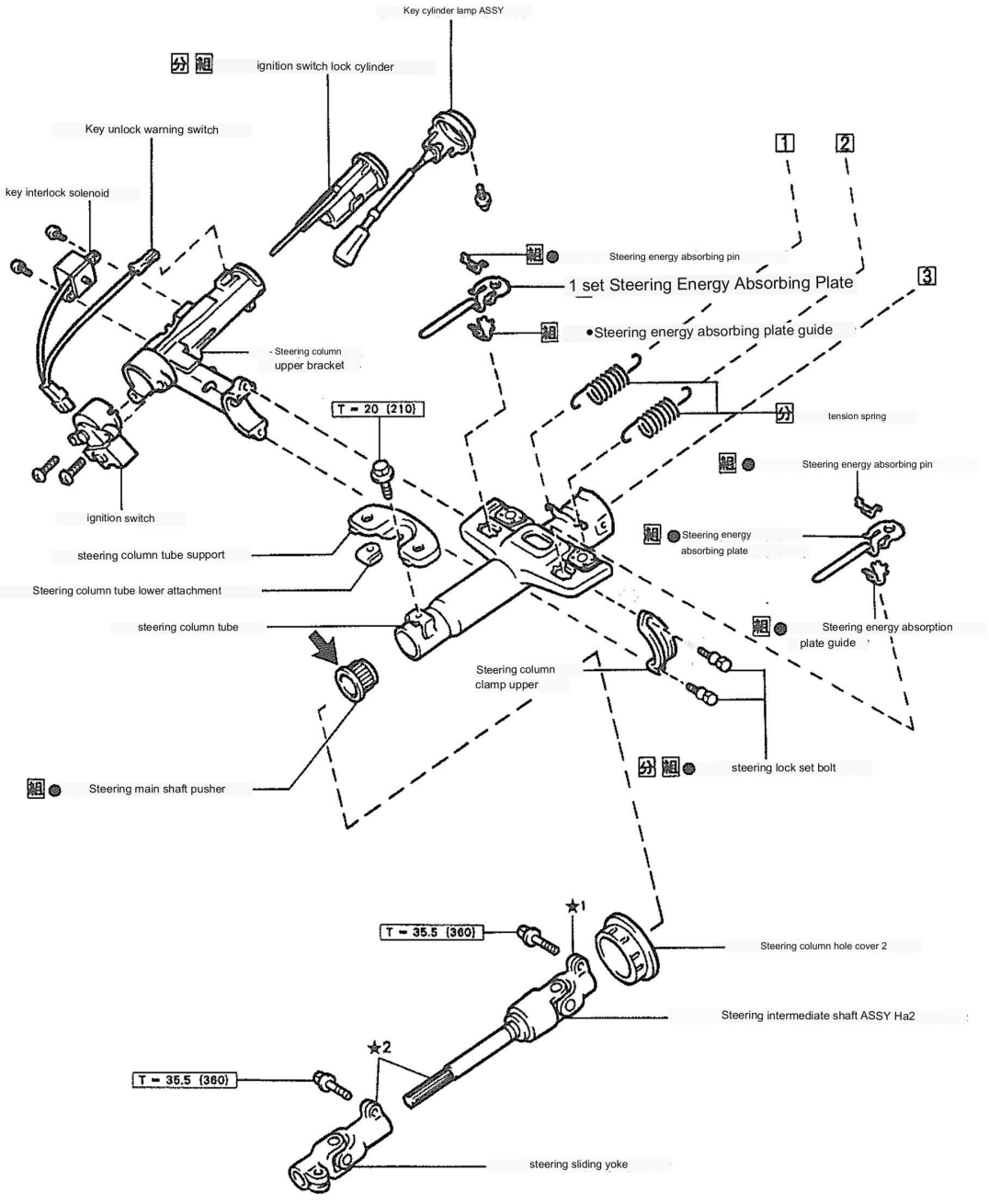
Cars with tilt steering column (2/2)



◆·····Apply Toyota genuine body grease W

★1, 2...Match mark ●·····Non-reusable parts □·····Tightening torque [N· m[kgf· cm]

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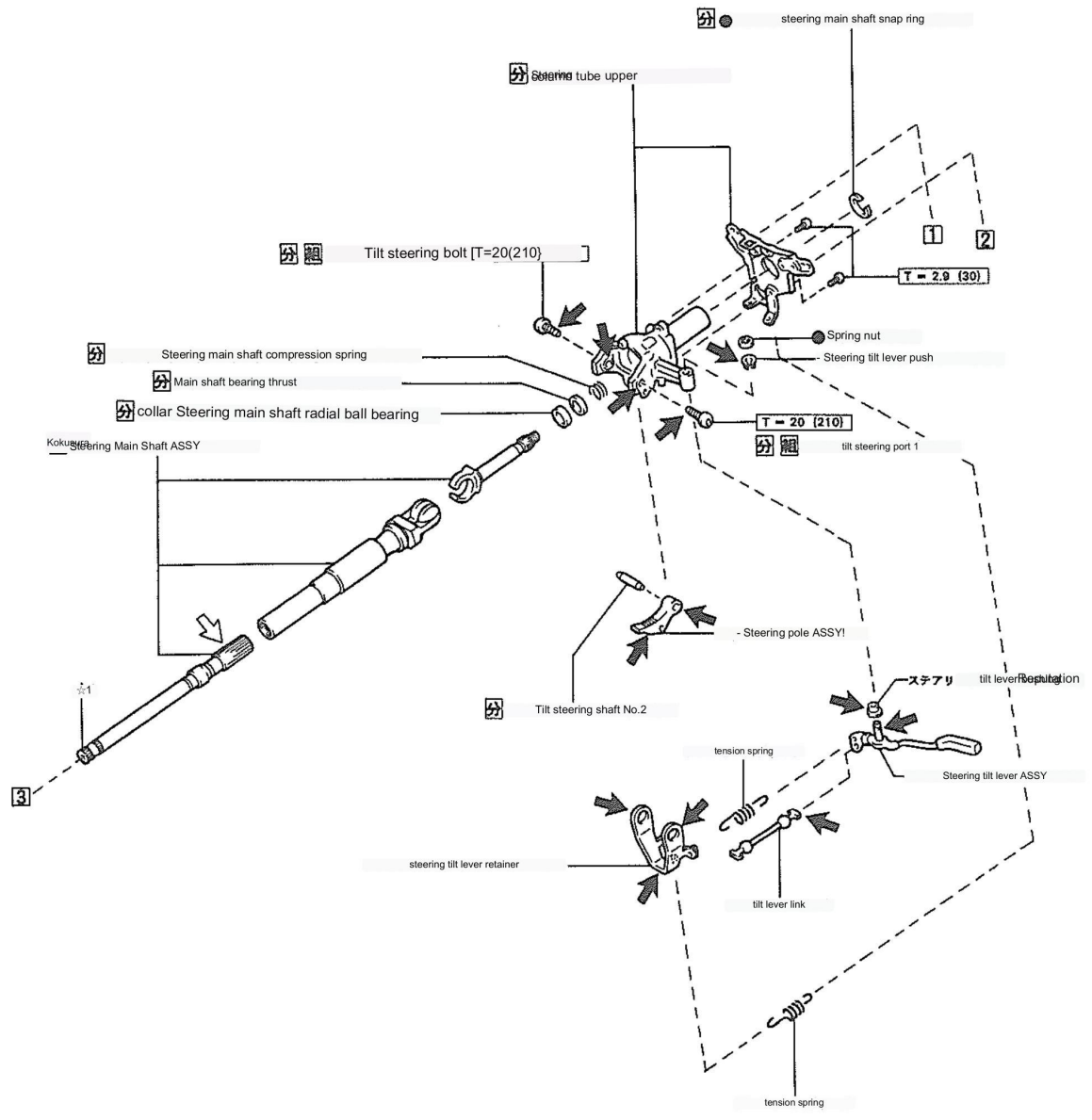
Cars with tilt & telescopic steering column (1/2)



←·····Apply Toyota genuine MP grease No.2

◆·····Apply Toyota genuine body grease W

★1...Match mark ●····· Non-reusable parts □··· ...Tightening torque [N· m[kgf· cm}]

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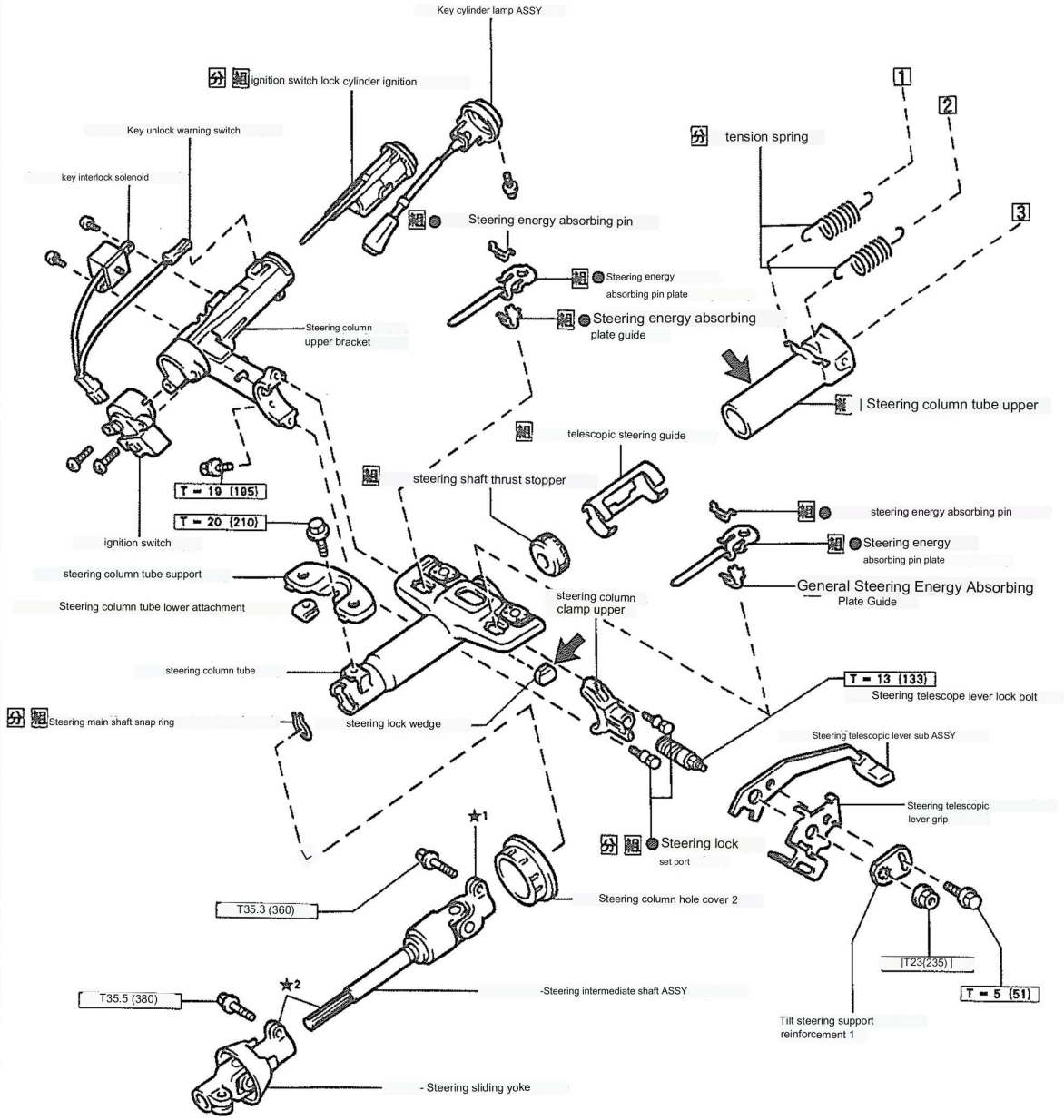
Cars with tilt & telescopic steering column (2/2)



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←····· Toyota genuine body grease W application

★1,2...Match mark ●····Non-reusable parts □····· Tightening torque [N·m {kgf·cm}]

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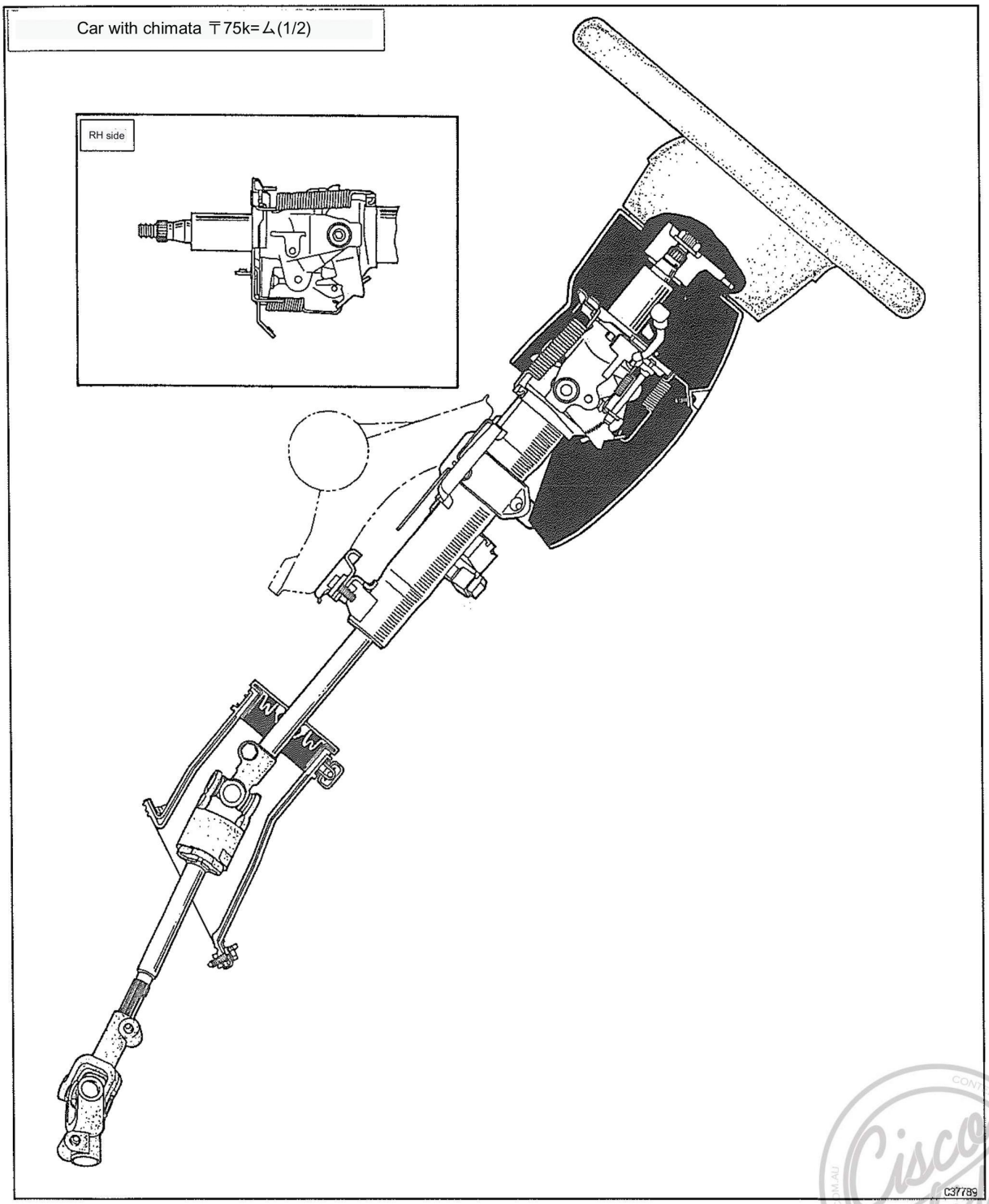
cross section

Car with chimata 〒75k=厶(1/2)



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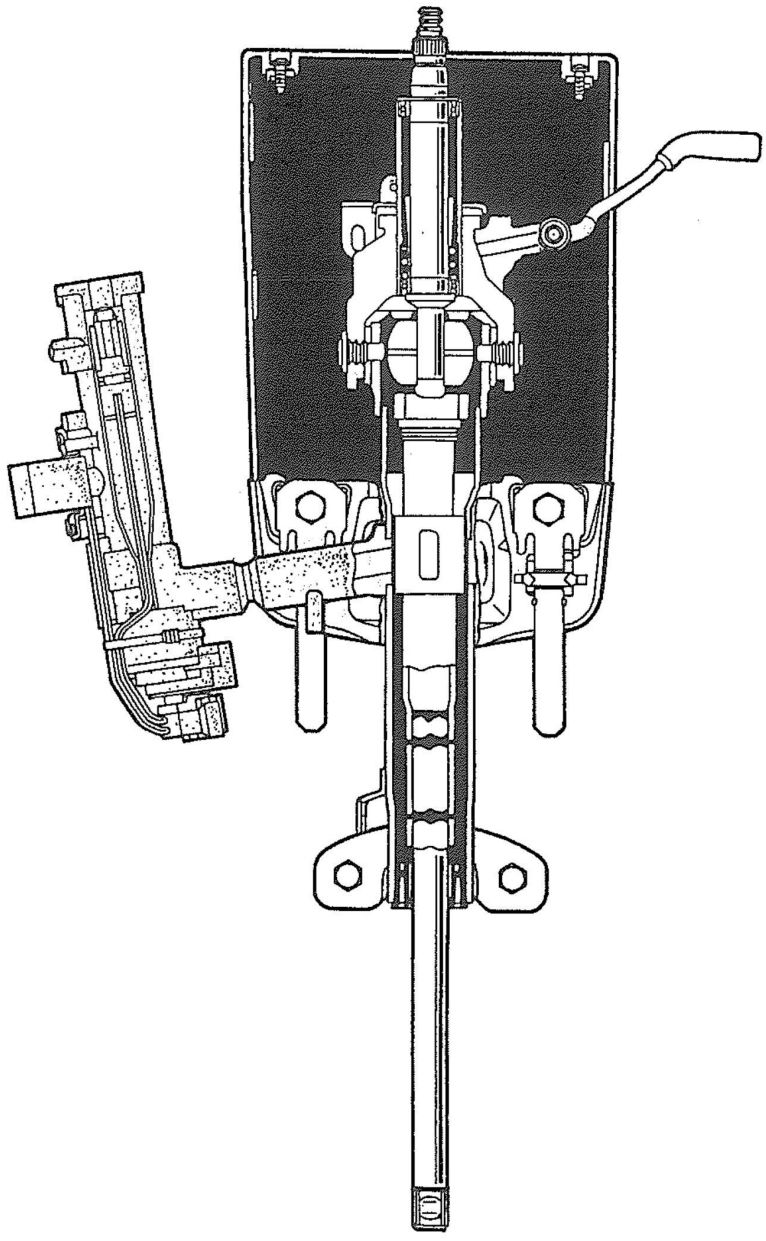
Cars with tilt steering column (2/2)



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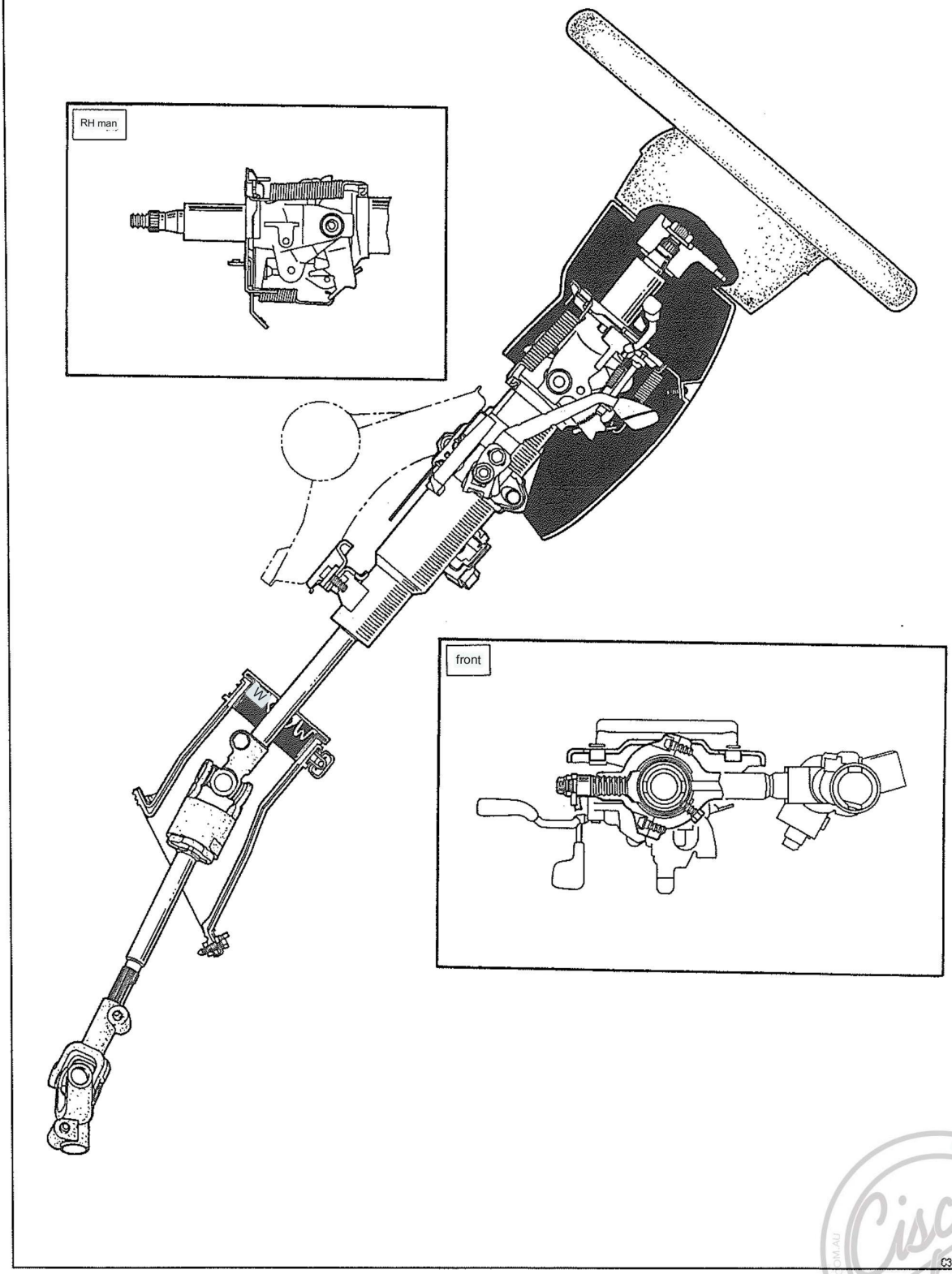
Tilt &ㄏヌˋㄅメㄥㄙCar(1/2)



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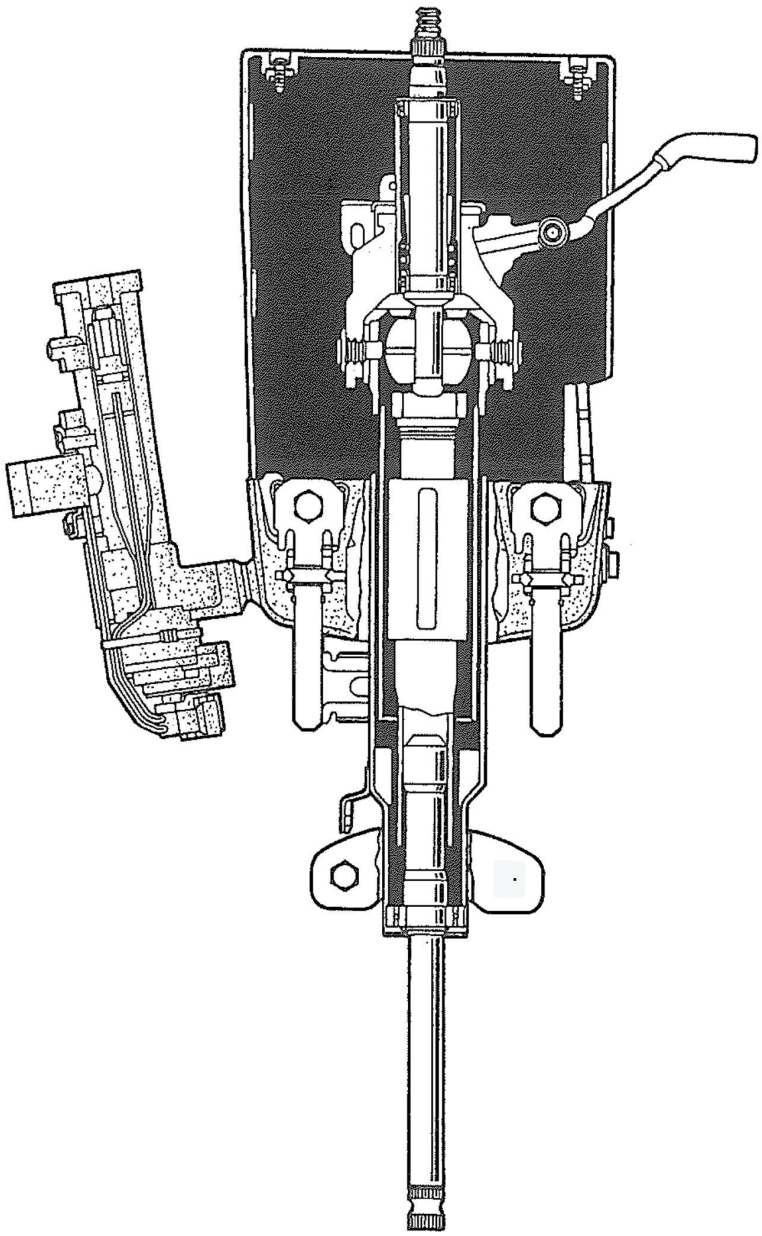
Tilt　　&ㄏヌメㄅメㄥムCar(2/2)



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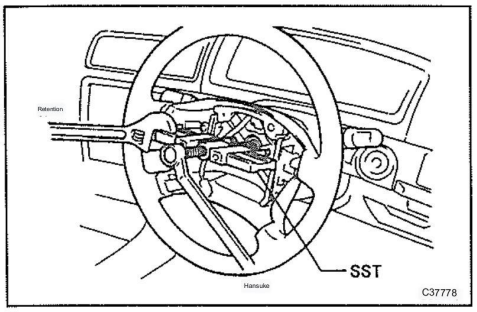


★Points to note when installing and removing steering column ASSY

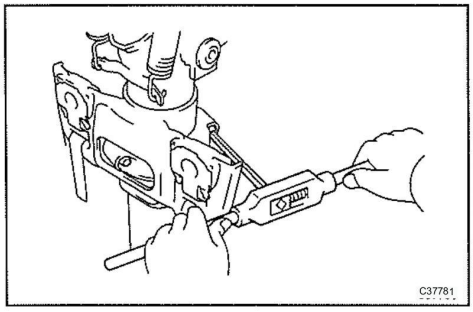
1 Steering wheel pad removal and removal
(See "SRS Airbag" - "Steering Wheel & Pads")

2 Steering wheel ASSY removal and removal
(1) Using SST, remove the steering wheel ASSY.
S S T 09951-05010 09952-05010 09953-05020 09954-05020
Apply oil to the thread and tip of the SST center bolt before use.

3 Spiral cable center ring
("SRS Airbag" - "Steering Wheel & Badge"
-See "Spiral Cable Center Ring")

4 Check that the steering wheel is running straight

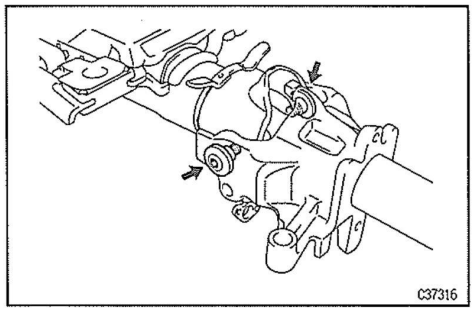
5 Check that the airbag warning lamp is on
(1) When the ignition switch is turned to ACC or ON, the airbag
Make sure that the warning lamp lights up for 6 seconds and then turns off.
admit.



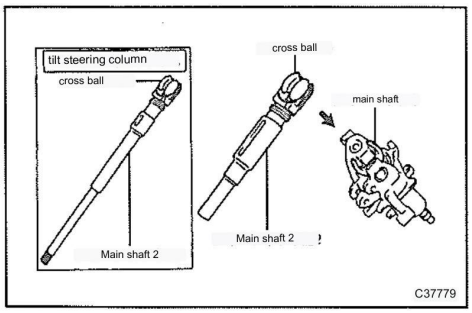
Points to note when disassembling the steering column ASSY

1 Steering column upper bracket ASSY and crank
Removing the upper
(1) Make a reverse tap on the steering lock set bolt, and bolt 2
Remove the book.
(2) Remove the upper bracket and clamp upper.

2 Tension spring removal
(1) Use a screwdriver to remove the two tension springs.
Zusu.



3 Steering main shaft W/column upper tube
Removal
(1) Using socket hexagon wrench 6, tilt steering 13
Remove the two bolts.
(2) Remove the tilt lever retainer and remove the steering main shaft W/column upper tube.
(3) Using a pin punch (5mm) and hammer, remove tilt steering shaft No. 2.



4 Steering main shaft removal
(1) Bend the joint of the main shaft at right angles and bend the cross ball.
Main shaft No. Leave the main shaft and main shaft on the 2 side.
Separate No.2.

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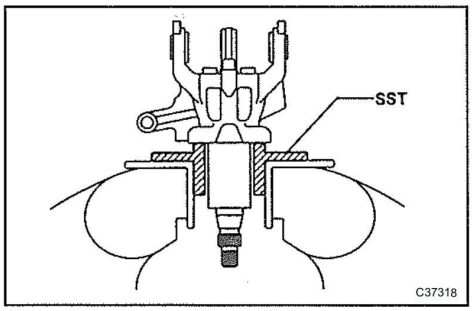
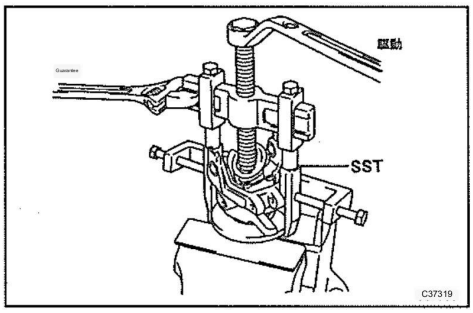
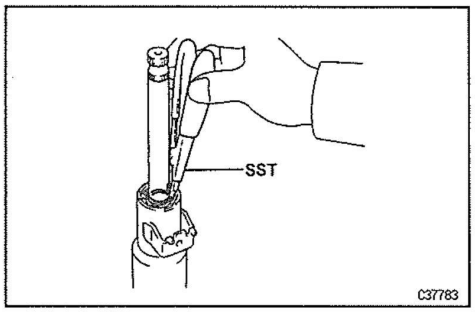


(2) SST and steering main shaft W/column upper
Fix the tube in a vise.
S S T 09316-00051



(3) Use SST to compress the spring in the column upper tube.
Let it
happen. SST 09951-04010 09952-04010 09953-04020
09954-04010 09955-04060
Apply oil to the thread and tip of the SST center
bolt before use.
(4) Using SST, remove the shaft snap ring.
S S T 09904-00010 09904-00020

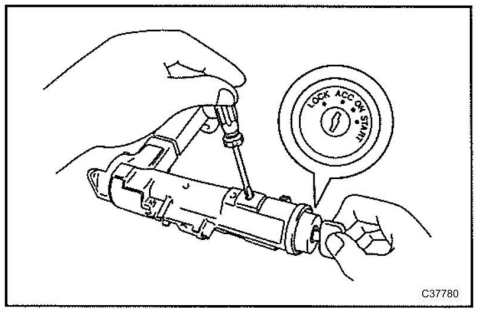


5 Main shaft No.3 removal
(Vehicles with tilt & telescopic steering column)
(1) Using SST, remove the shaft snap ring. Do not
S S T 09905-00012
allow main shaft No. 3 to fall off.

Inspection and replacement of steering column components

13

1 Steering lock mechanism inspection
(1) Make sure that the steering lock mechanism operates when the key is removed.
confirm.
(2) Check that the steering lock mechanism is released when the key is inserted
and moved to the ACC position.



2 Ignition switch lock cylinder replacement
(1) Set the ignition switch to the ACC position. (2) While
pushing the thin blade screwdriver into the hole shown in the figure,
pull out the dar.
(3) Place the new lock cylinder in the ACC position.
(4) Insert the lock cylinder.
(5) Check that the lock cylinder is securely fixed.
(6) Check the operation of the steering lock mechanism.

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3 Replace the ignition switch, key interlock solenoid and key unlock warning switch.

(1) Set the ignition switch to the ACC position.

(2) While pushing in the thin blade screwdriver, pull out the lock cylinder.

put out.

(3) Remove the two screws and remove the ignition switch. (4) Remove the two screws and remove the key interlock solenoid.

Remove. (5)

Push up the sensor part and release the key unlock warning switch.

Remove.

(6) Slide and install the new key unlock warning switch.

(7) Assemble the new key interlock solenoid with two screws.

Find it. (8)

Assemble the new ignition switch using two screws. (9) Align the lock cylinder to the ACC position.

(10) Insert the lock cylinder and check that it is securely fixed.

(11) Check the operation of the steering lock mechanism.

4 Inspecting the bearing inside the steering column tube upper

(1) Check that the bearing rotates smoothly and there is no abnormal noise.

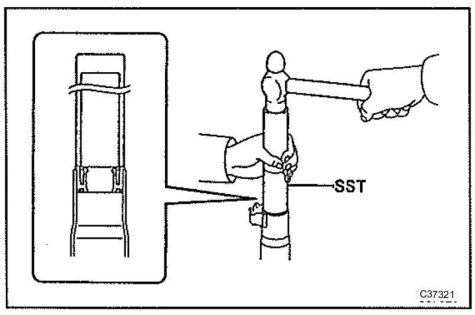
<Reference> When replacing the bearing, replace the steering column upper

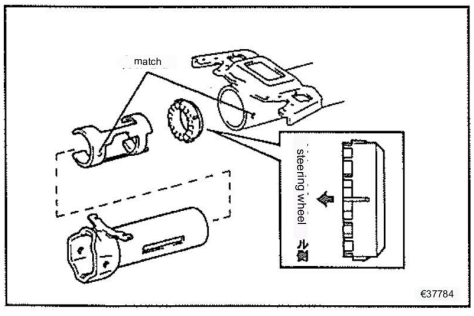
Replace with tube ASSY. 5

the bearing inside the steering column tube

(Vehicles with tilt & telescopic steering column) (1) Check that the bearing rotates smoothly and there is no abnormal

〈参考〉 noise. When replacing the bearing, replace it with the steering column tube ASSY.





Steering column ASSY Notes on assembly work

1 Grease application

(See "Exploded diagram")

2 Main shaft bush assembly

(Cars with tilt steering column)

(1) Assemble the new main shaft bushing using SST and a hammer.

S S T 09612-22011

(2) Apply chassis grease special to the inside of the bushing.

3 Steering column tube assembly

(Cars with tilt & telescopic steering column) -

注意 Convex part of telescopic steering guide and column tube

Align the concave parts.

· Assemble the steering shaft thrust stopper in the direction shown in the diagram

the ONTENT.

return home times
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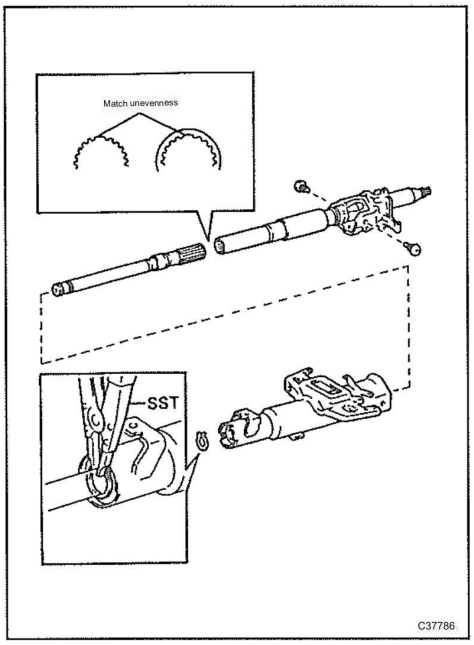


4 Steering main shaft W/column upper tube assembly

(Tilt & car with telescopic steering column)

(1) Steering main shaft to steering main shaft No.2

Attach No.3. Align

NOTE: the concave spline on shaft No. 2 with the convex spline on shaft No. 3.

(2) Steering main shaft W/column upper tube

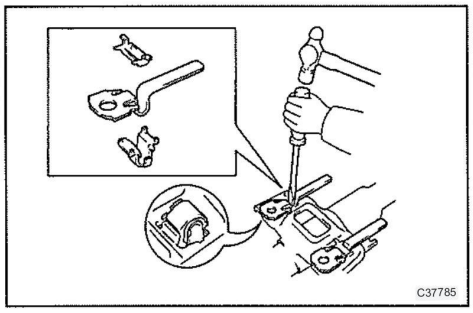
Assemble to steering column tube.

NOTE: Do not slide shaft No. 3 toward shaft No. 2.

(3) Using socket hexagon wrench 6, assemble the two tilt steering bolts.

(4) Assemble the snap ring using SST.

S S T 09905-00012



5 Steering energy absorbing pin, steering energy absorbing plate and steering energy absorbing plate guide assembly

(1) Assemble the new upsorbing plate guide to the steering column tube. Attention

Absorbing: plate guide, ensure that the steering column It must be attached to the Mutube. (2) Assemble the new energy absorbing plate.

(3) Using a screwdriver and hammer, remove the new absorber.

Assemble the steering column pin to the steering column tube. CAUTION

Make sure that the absorbing bottle tab is firmly attached to the steering column. be attached to the tube. 6

13

column upper bracket ASSY and crank

Assembling the column upper bracket (1) To assemble the column upper bracket, tighten the two new steering lock set bolts until they are threaded.

conduct.

NOTE: Insert the positioning pin of the upper bracket into the hole of the column tube. match.

· When assembling the tube upper stopper bolt to the upper bracket, make sure to insert the tip of the bolt into the groove of the steering column tube upper.

7 Check the engagement status of the tilt steering pole

8 Check the condition of the steering column tube upper slide (with tilt & telescopic steering column)

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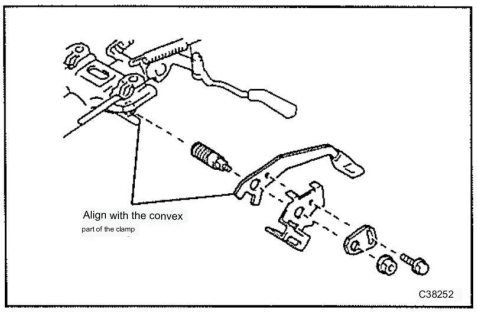

Cars with tilt & telescopic steering column

9 Steering telescope lever lock bolt assembly

(1) Set the telescopic mechanism to its most extended position.

(2) Tighten the lock bolt to T=20N· m {203kgf· cm}, loosen it at

ろleast 5 times, then loosen it again to T=13N· m 133kgf· cm}

Tighten with.

注意 The lock bolt is reverse threaded.

〈参考〉 The telescopic mechanism is in a locked state.

10 Steering telescopic lever sub ASSY assembly

注意 Steering telescopic lever stopper and clamp up

Assemble with the stopper part of the par in place.

11 Steering support reinforcement No.1 assembly bolt and

and tighten the nuts

注意 · Bolts and nuts are reverse threaded.

· When tightening the nut, make sure that the steering telescopic lever lock bolt and steering telescopic lever do not loosen.

13

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14 SRS airbag

Notes ····· 14 — 2
Handling/Working Precautions/ ····· 14-2
General notes ····· 14-2
Treatment of vehicles damaged in collisions, etc. ····· 14-2
Precautions for handling each ····· 14 — 3
part...Spiral cable
((Built-in combination switch) 143
Center airbag sensor ASSY and
Side airbag sensor ASSY... 14 - 3
steering wheel pad,
passenger airbag assy,
Side airbag ASSY... 14-3
Airbag wire harness ····· 14-4
Airbag connector ····· 14-4
SRS airbag ····· 14-5
Preparation items ····· 14-5
Parts layout diagram ····· 14 — 6
steering wheel & pad
& spiral cable 14-7
股普Configuration Diagram ····· 14 — 7
steering wheel & bad
& Points to note when installing spiral cables... 14-8
Passenger airbag ASSY ····· 14 — 9
····· 14-9
Passenger airbag ASSY removal
Points to note during work... 14-10
Center airbag sensor ASSY ..... ····· 14-11
Configuration ····· diagram 14-11
Troubleshooting ····· 14-12
How to proceed with troubleshooting ····· 14-12
Diagnosis check ····· 14 13
Diagnosis code erase 14-14 ····· Circuit
diagram ····· 14-15
Preparation before inspection ····· 14-17
Diagnosis code and problem phenomenon list... 14-17
Troubleshooting by diagnostic code ····· 14-18
Troubleshooting by problem phenomenon ····· 14-28
Individual ····· inspection 14-32
spiral cable ····· 14-32
Center airbag sensor ASSY ····· 14-32
Precautions when polishing ····· the
airbag 14-32 Airbag (steering wheel pad and
Passenger airbag) Precautions when disposing... 14-32
Airbag (steering wheel pad and
passenger airbag) Disposal... 14-33
Deployment guidelines when discarding a vehicle equipped with an airbag system 14-33
steering wheel pad and
Deployment instructions when disposing of a single passenger airbag... 14-34
Airbag disposal area ····· 14- 35
Passenger airbag disposal area ····· 14-37
SRS side airbag preparation ····· 14-38
items. ····· 14-38
Parts layout diagram ····· 14-39
Side airbag ASSY ····· 14-40
Detachment configuration diagram ····· 14-40
Side airbag ASSY removal
Points to note during work... 14-41
Side airbag ASSY installation
Points to note during work... 14-41
Side airbag sensor ASSY ····· 14-42
Fuyin configuration diagram ····· 14 - 42
Troubleshooting· ····· 14-43
How to proceed with troubleshooting ····· 14-43
Diagnosis check ····· 14- 44
Diagnosis code erase ····· 14- 45
circuit diagram ····· 14-46
Preparation before inspection ····· 1447
Diagnosis code and problem phenomenon list... 14-47
Troubleshooting by diagnostic code ····· 14-48
Troubleshooting by problem phenomenon ····· 14-58
Individual inspection ····· 14-62
Side airbag sensor ASSY ····· 14 - 62
Precautions when disposing of side airbags ····· 14-62
Precautions when disposing of side airbags ····· 14-62
Side airbag disposal ····· 14-62
Vehicles equipped with side airbag system
展Instructions for enchantment 14
Deployment guidelines when disposing of individual side airbags ····· 62 14-63 14
Side airbag magic trick ····· 14-64

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Notes

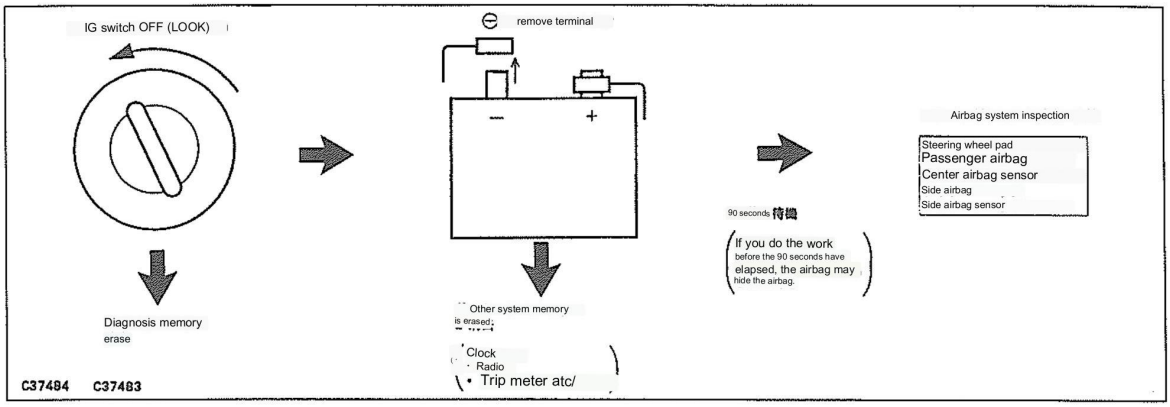
Handling/Working Precautions

- Serious accident due to malfunction during work
- Malfunction at the time of accident

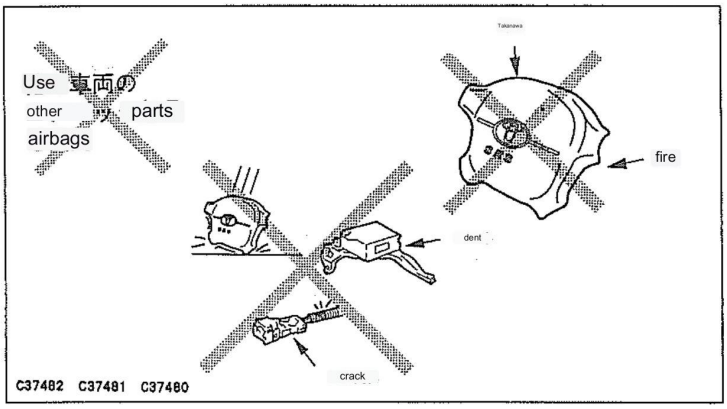
} To prevent this, please read the following carefully and perform work using the correct procedures and methods.

General notes

1 Airbag system installation/removal, preparations for inspection



2 Handling the airbag after installation/detachment inspection



When replacing parts, replace them with new parts.

<reference> There are labels affixed around the airbag system with precautions, so follow the instructions.

14

Treatment of vehicles damaged in collisions, etc.

Notes

1. When using an electric welder, remove the airbag before starting work.
2. When performing work that applies shock to body sheet metal (especially near the center pillar), there is a risk of injury due to malfunction. Therefore, be sure to remove the airbag sensor before starting work.
3. Do not expose the sensor to high temperatures

Cases in which SRS airbag inspection is required

<Reference> In the following cases, inspect each component of the SRS airbag system. 1. If the vehicle is damaged due to a collision, including minor damage in which the airbag did not deploy.

2. If a diagnosis code is output

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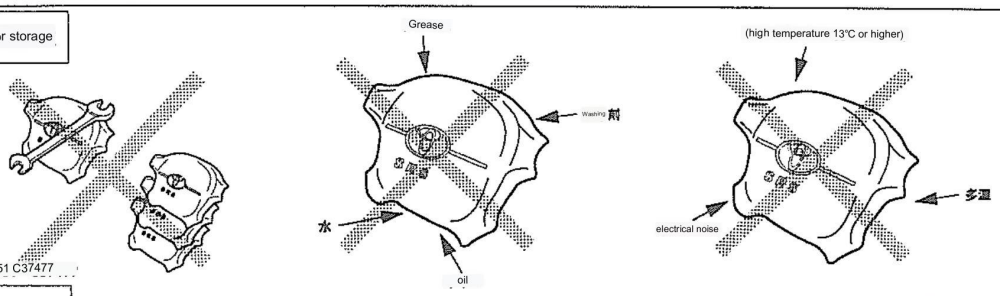
Precautions for handling each part

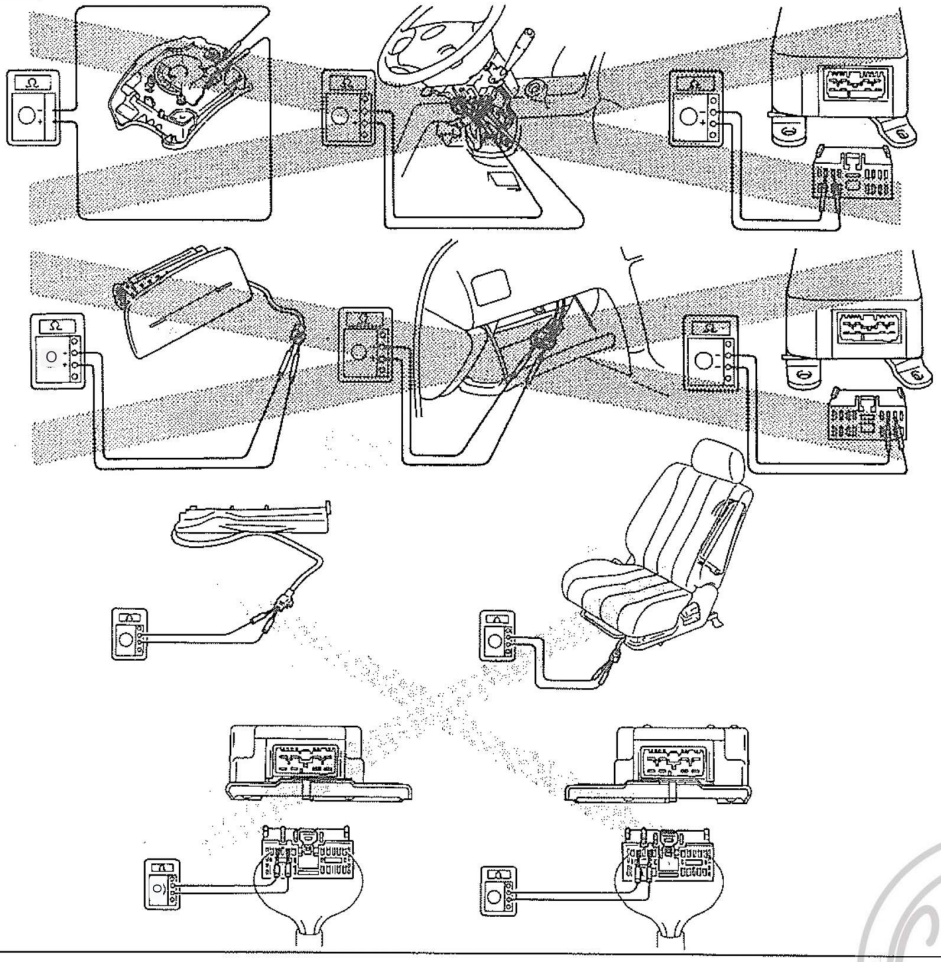
Spiral cable (with built-in combination switch) · Be sure to check ``Steering wheel & pad'' and ``Points to note when installing steering wheel & pad & spiral cable'' before working as there is a risk of wire breakage.Center airbag sensor ASSY and side air Bag sensor ASSY If the airbag deploys due to a collision, be • sure to replace the sensor ASSY Steering wheel pad, passenger airbag ASSY, side airbag ASSY - Be sure to lock the double lock on the connector and store with the pad side facing up.· Conduct an external appearance inspection even in the event of a collision when the airbag is not deployed (dents, cracks, dirt) · Use SST for airbags (vehicles and individual items) and dispose of them after deploying them

Precautions for storage



Inspection precautions

Never measure resistance (the airbag may deploy due to the tester's current, which is dangerous)



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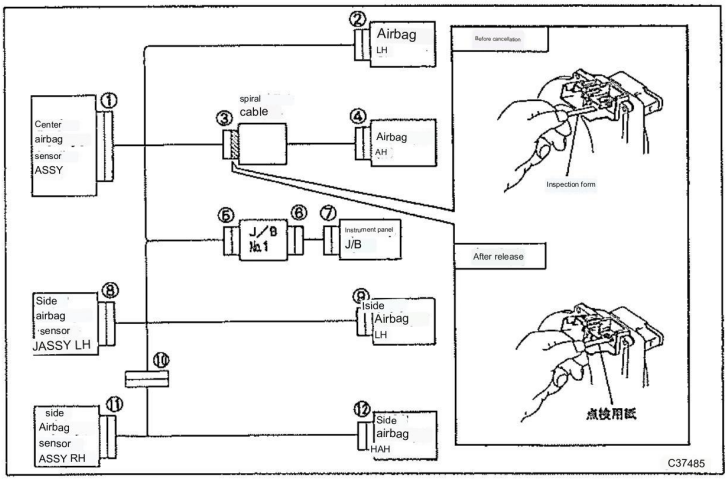
Airbag wire harness

・ The wire harness for the airbag system is colored yellow, except for parts that are not visible in the engine room, to distinguish it from other systems.Airbag connector

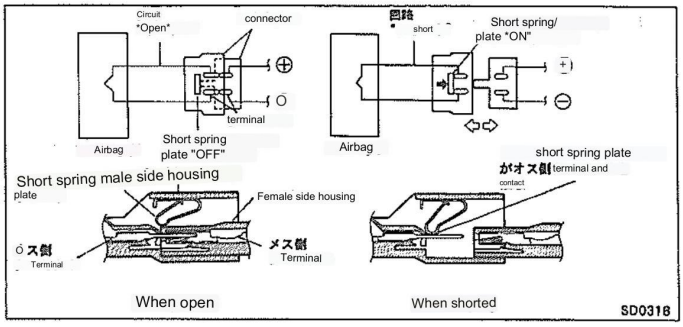


Organization name	Application
Terminal short mechanism Half- ※	1. 2. 3. 4 8. 9. 1. ⑫
mating detection mechanism	1. 8. 0
Connector Double locking mechanism	2. 3. 4. ⑩

注意 ・ Do not release the short circuit mechanism of the connector unless instructed to do so during troubleshooting. ・ If you insert paper that is too thick, the terminals may be shorted. Do not use paper with the same thickness as the terminal to avoid damaging the spring.

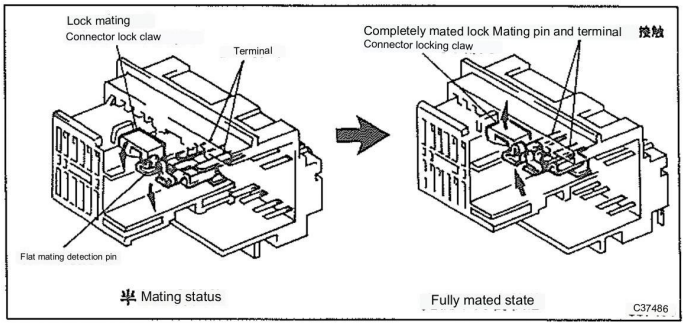
(1) Terminal short mechanism

This mechanism is designed to prevent accidental explosions during maintenance work, and is installed on the connector between the center airbag sensor ASSY and the airbag. A short spring plate is installed inside the male connector, and when the connector is removed, the power supply terminal and booth terminal of the airbag are automatically shorted, resulting in a closed circuit on the airbag side (no potential difference between the two terminals). does not occur)



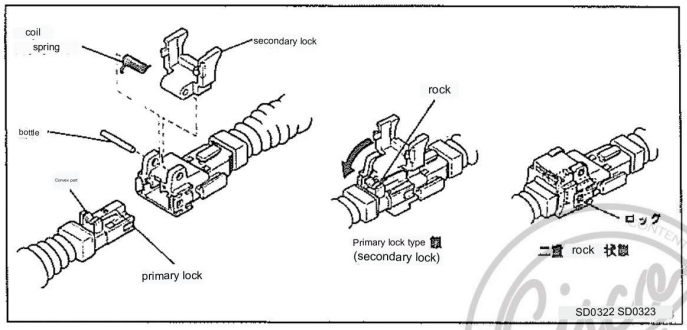
(2) Half-fit detection mechanism

This mechanism electrically detects whether the connector is securely connected. When half mated, the connector locking tab lowers and at the same time the mating detection pin is pushed down. When fully mated, the mating detection pin that had been lowered returns to its original position (moves up). When the male terminal and the mating detection pin come into contact, the input side and output side of the sensor are connected in series, and the sensor assembly is established. Complete mating is detected by applying current to the two.



(3) Connector double locking mechanism

This mechanism is used in ignition wire harness connectors, and improves the reliability of the connection by locking the connectors (male and female) in a double manner. The structure is such that if the primary lock is not achieved, the protrusion will get in the way and the secondary lock will not be possible.



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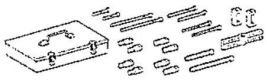
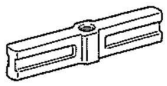
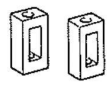
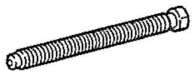
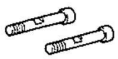
T0048897

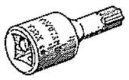
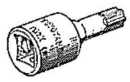
SRS airbag

Preparation items

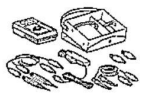
S S T

	09950-50010	Blur C set	
	(09951-05010)	hanger 150	For steering wheel removal
	(09952-05010)	Slide arm	For steering wheel removal
	(09953-05020)	Center bolt 150	For steering wheel removal
	(09954-05020)	Crow No.2	For steering wheel removal

tool

	09042-00010	Torx socket wrench (T30)	Steering wheel pad removal and removal
	09042-00020	Torx socket wrench (T40)	Center airbag sensor ASSY removal/removal

instrument

	09082-00012	toyota electrical tester	Each part is for use as a pointer.
	(09083-00060)	Mini test lead	Each part is for use as a pointer.
	09082-00710	airbag deployment wire	Airbag disposal
	09843-18020	Diagnosis check wire	For diagnosis inspection
Diagnosis check wire 09843-18020		70258	For diagnosis inspection (DLC3)

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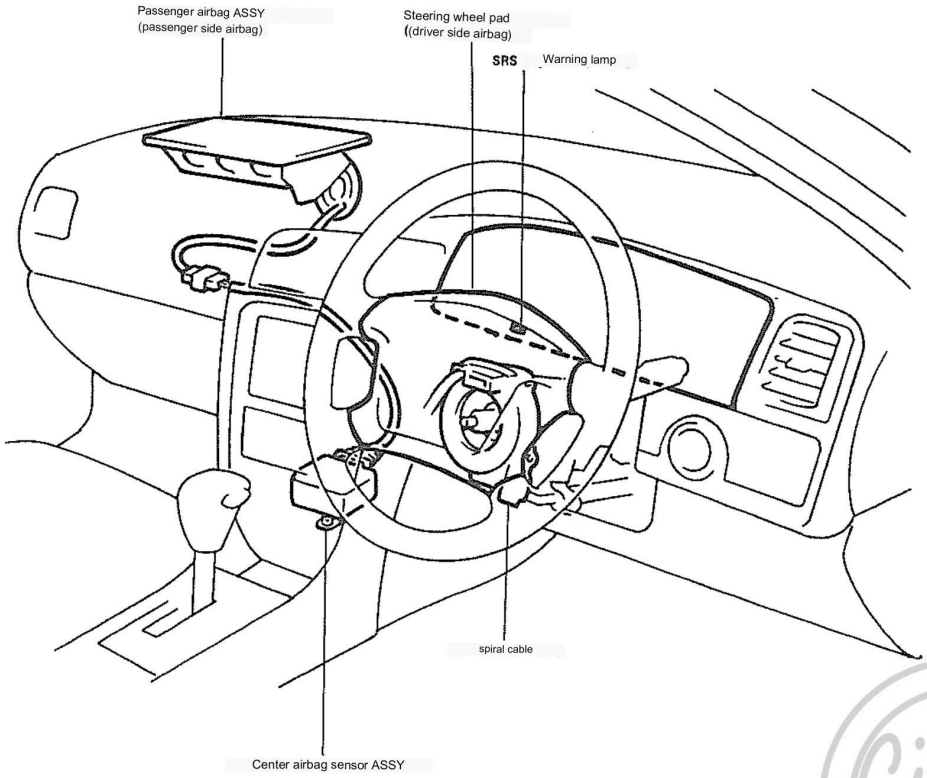
	09991-50100	Toyota Diagnosis Reader Set	For diagnosis inspection
	09991-50320	Program IC card Engine system 3	For diagnosis inspection

Oils and fats Others

Wire harness (core wire cross-sectional area 1.25mm²) 52010	Airbag single item magic
2 bolts (length under neck 35mm or more, pitch 1.0mm, nominal diameter 6.0mm) 54607	Airbag (driver side) for single item disposal
12V battery for cars 52506	Airbag disposal
2 tires with disc wheels, 3 tires 55003	Airbag (driver's side) for single item disposal
1 tire with disc wheel, 4 tires 55004	Airbag (passenger side) for single item disposal
Safety glasses, gloves, plastic bags 72000	Airbag disposal

T0046606

Parts layout diagram



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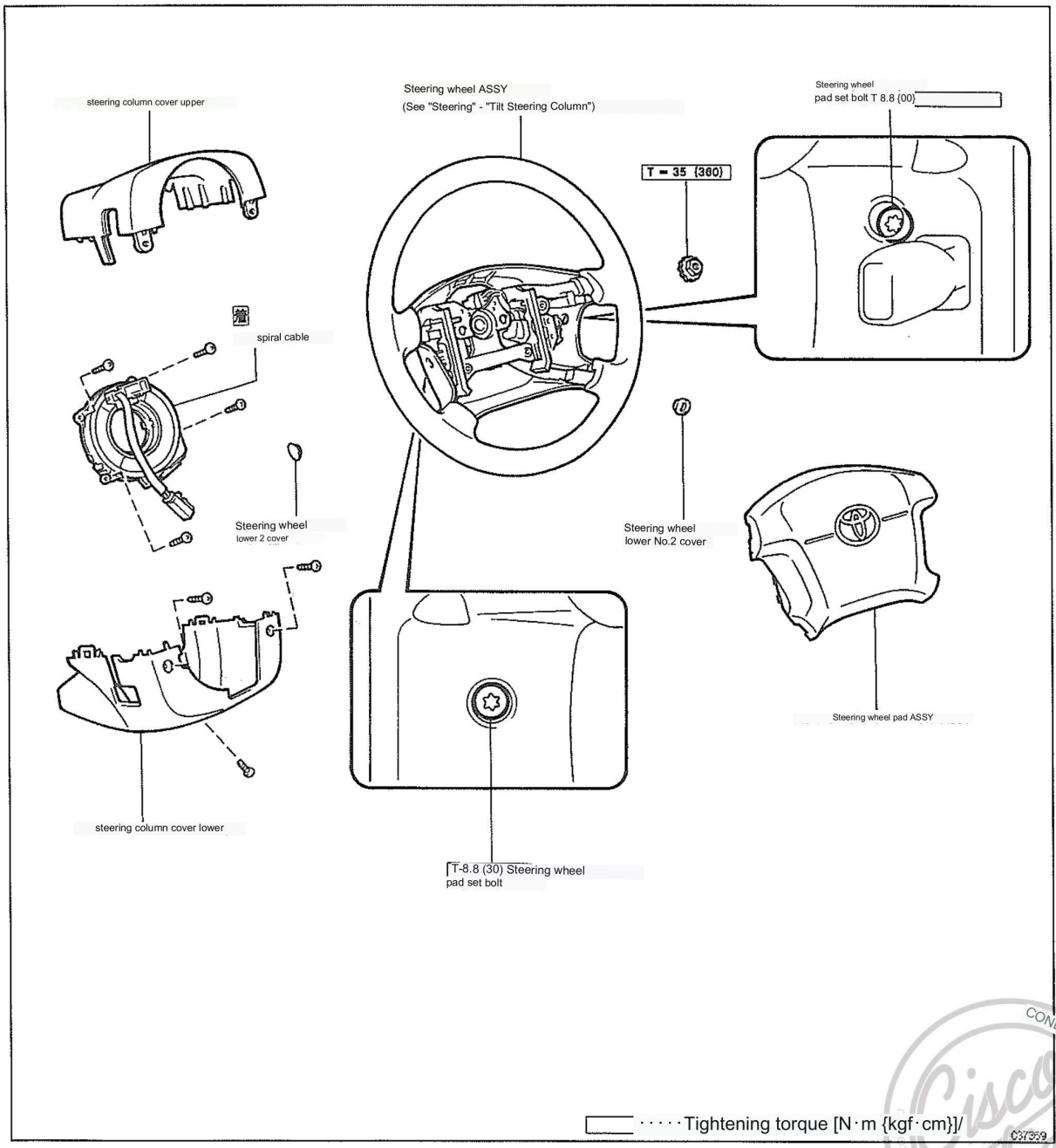
T0040700

Steering wheel & pad & spiral cable

注意 · When removing the steering wheel, pad, and spiral cable, carefully read the ``Precautions".·

Keep the steering wheel in a straight line.

Detachment configuration diagram



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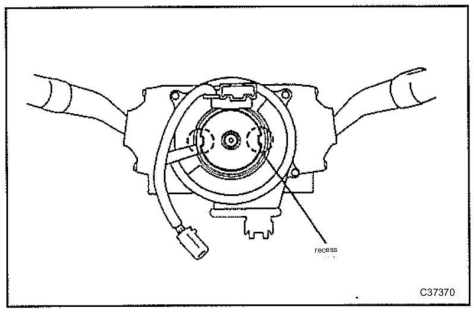


steering wheel & pad & Points to note when installing spiral cables

1 Spiral cable inspection

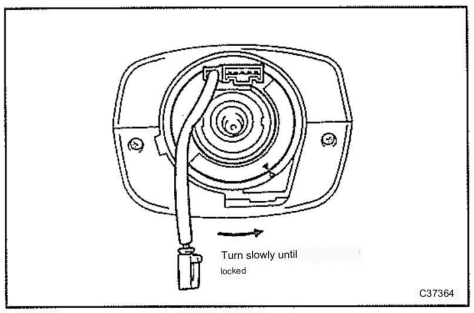
(Refer to "Individual inspection" - "Spiral cable")

2 spiral cable installation

(1) Insert the convex part of the cable into the concave part of the cancel cam as shown in the figure, and then

Attach the four screws and connector, and attach the cable. When

注意 replacing the spiral cable with a new one, remove the lock pin before attaching it to the handle.



3 Spiral cable centering

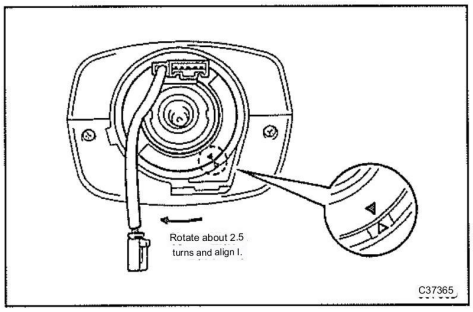
(1) Make sure the IG switch is OFF (LOCK). (2) Make sure the battery terminal is disconnected. •Caution: If you

remove the terminal, do not start working for 90 seconds afterward.

(3) Check that the front tires are running straight.

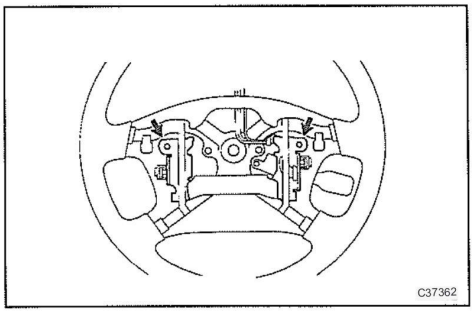
(4) Turn the spiral cable counterclockwise until it locks.

<Reference> The spiral cable can rotate up to about 5 times.



(5) Rotate the spiral cable 2.5 turns clockwise from the locked position and align the center mark as shown.

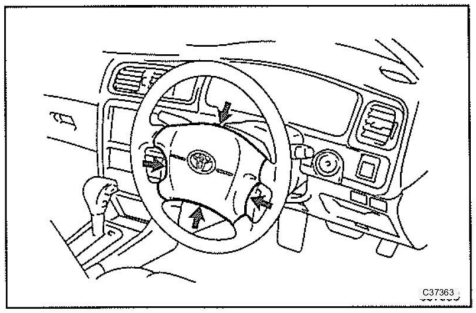
4 Check steering center position



5 Steering wheel appearance inspection

Criteria If the following items apply, replace the steering wheel with a new one.

① Deformation of the steering wheel metal bracket.



② New pads cannot be installed easily. ③ When the pad is installed, the pad and steering wheel interfere. Also, the gaps are not uniform.

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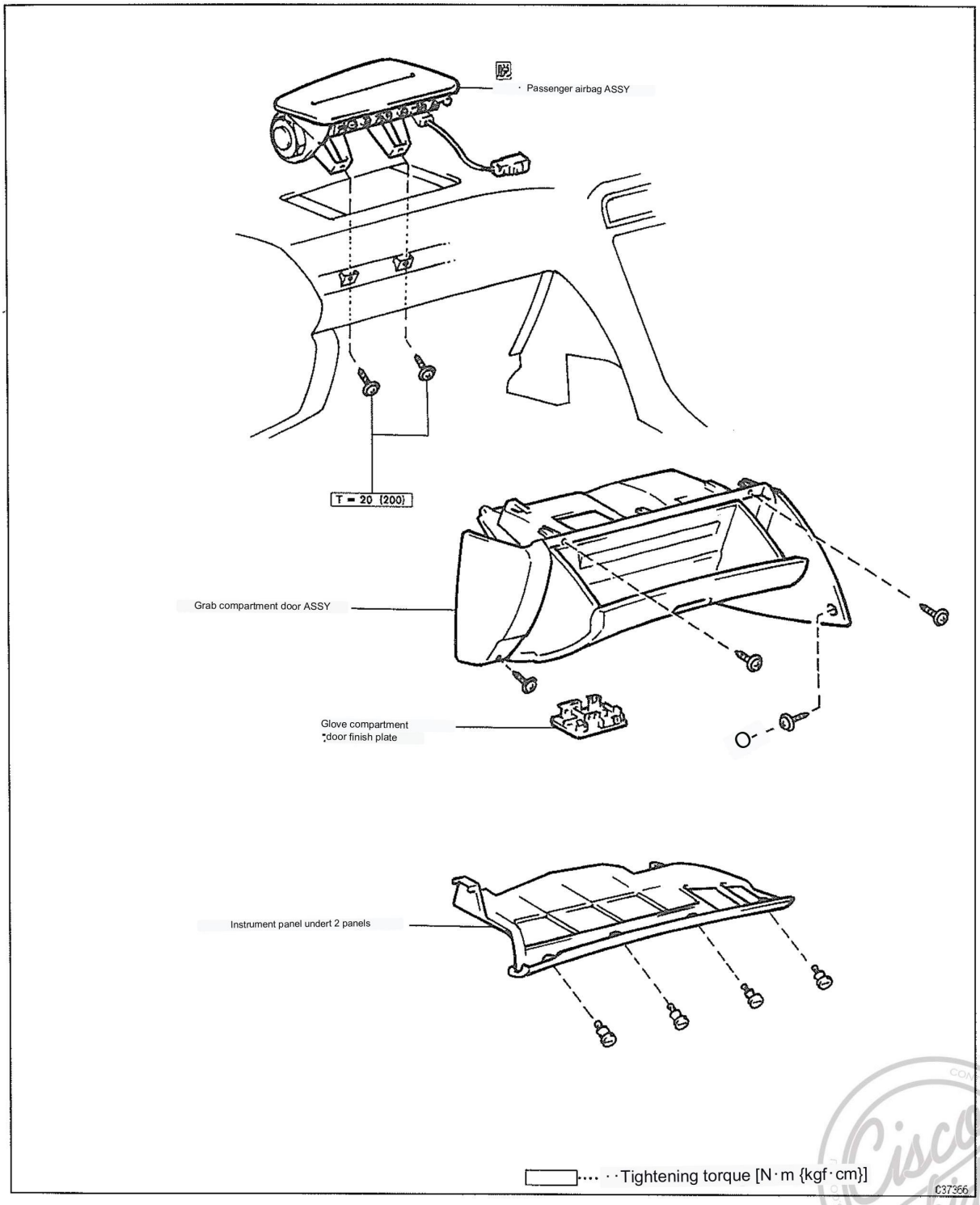
Passenger airbag ASSY

When removing the passenger airbag ASSY, be sure to

Please check the section carefully.

Detachment configuration diagram



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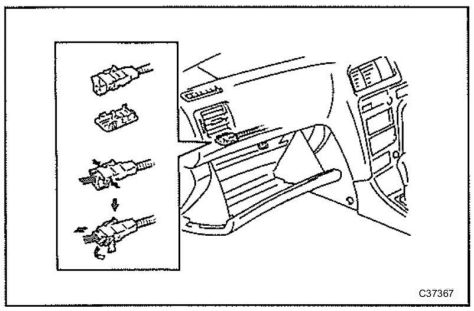


Passenger airbag ASSY removal

Points to note during work

1 Glove compartment door finish plate removed

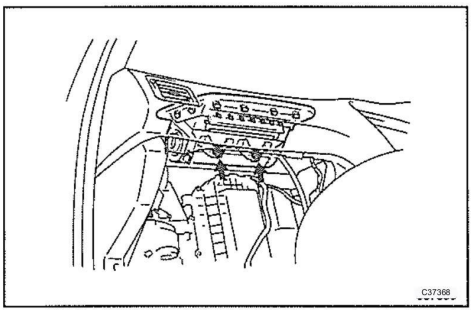
death

(1) Remove the finish plate.

(2) Remove the connector from the finish plate.

(3) Disconnect the passenger airbag connector and attach the glove

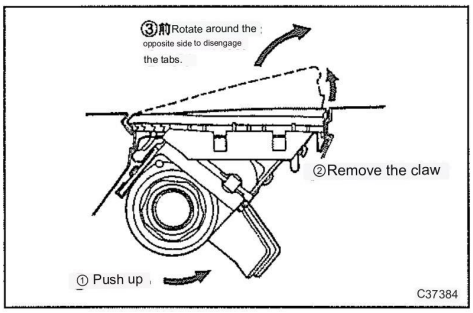
Push it into the opening hole on the top of the box.



2 Passenger airbag ASSY removal

(1) Remove the two bolts and separate the passenger airbag

ASSY from the instrument panel reinforcement ASSY.



(2) Push up the passenger airbag ASSY from below in front of the door.

Remove the 4 mating points of the claws on the side.

(3) Rotate the passenger airbag ASSY centering on the front of the

분, door. Undo the 4 hooks at the rear of the door and remove it

from the instrument panel ASSY.

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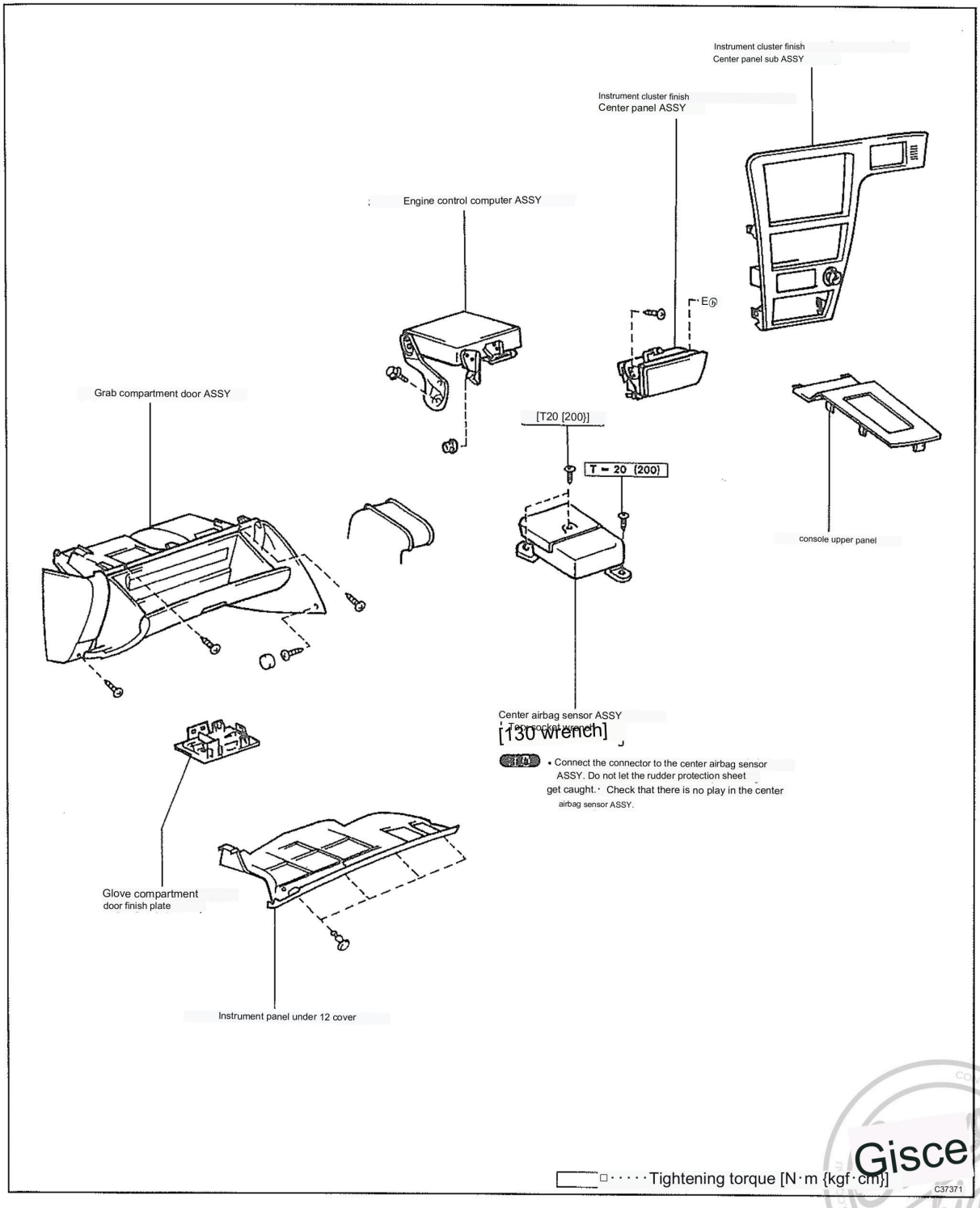
Center airbag sensor ASSY

T0040703

When removing the center airbag ASSY, carefully read the "Precautions".

Detachment configuration diagram



• Connect the connector to the center airbag sensor ASSY. Do not let the rudder protection sheet get caught. • Check that there is no play in the center airbag sensor ASSY.

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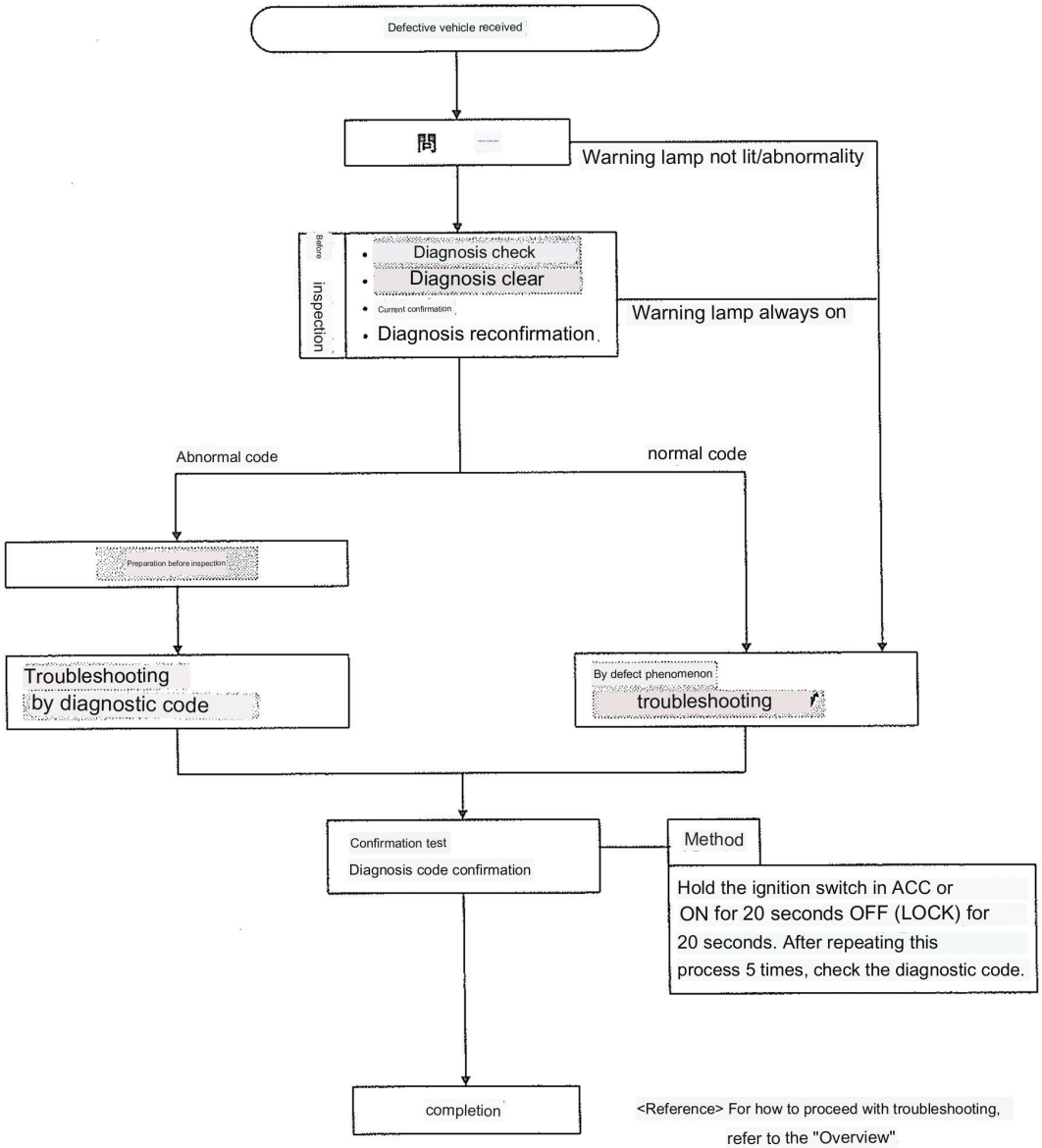
T004670

Troubleshooting How to

proceed with troubleshooting



<Reference> For how to proceed with troubleshooting, refer to the "Overview"

The details are described in the following section.

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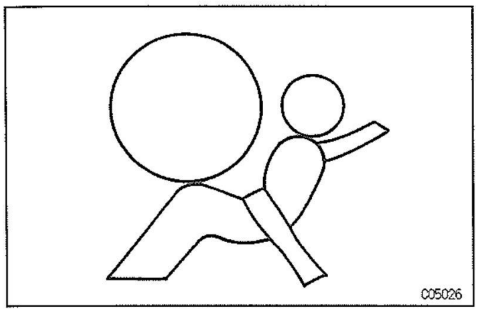
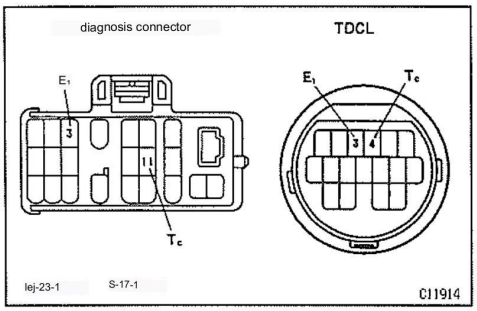
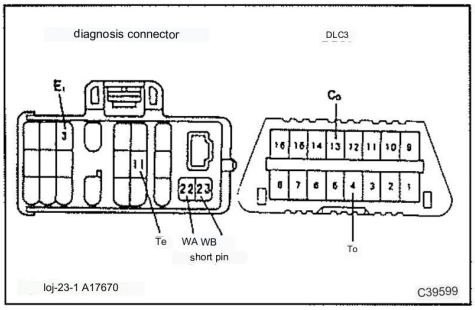






Diagnosis check

Warning lamp check

· IG switch ACC (ON)

· Make sure that the check warning lamp lights up for about 6 seconds and then turns off.

<Reference> - If the light remains lit when the IG switch is set to ACC or ON, there is a problem with the airbag system. · If the light occasionally lights up after about 6 seconds or if it lights up even when the IG switch is OFF (LOCK), there may be a short circuit in the warning lamp system.

Diagnosis code reading

Reading by warning lamp

(1) IG switch ACC (ON)

· Turn the IG switch to ACC or ON and wait for 20 seconds.

(2) ToE, between terminals (excluding 1JZ-GE, 1G-FE)

• Using the diagnosis check wire, diagnosis

short between the TcE1 terminals of the connector or TDCL.

(3) Short circuit between TcE terminals, TcC6 terminals (1JZ-GE, 1G-FE)

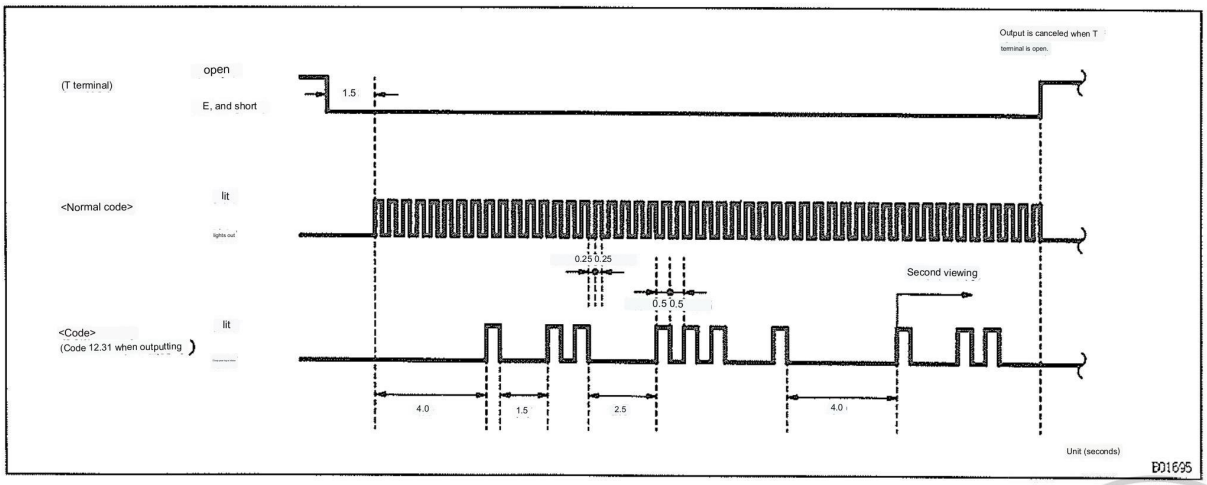
· Use the diagnosis check wire to check the diagnosis.

between the TcE1 terminals of the connector or the TC. terminals of the DLC3

short circuit.

(4) Warning lamp reading

• Read the number of flashes of the warning lamp.



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Reading by Toyota Diagnosis Reader

(Vehicles equipped with TDCL)

(1) Diagnosis code reading

· Read the diagnosis code using the Toyota Diagnosis Reader.

• engine system code

2JZ-GE·····818 1JZ-GTE·····820 2L-TE·····2F0

Diagnosis code erase

(1) IG switch OFF (LOCK)

(2) Lead wire connection

· Connect the lead wires to the Tc and AB terminals of the TDCL or diagnosis connector.

(3) IG switch ACC (ON) - Turn the ignition switch to ACC or ON and wait for about 6 seconds.

do. (4)

Tc, AB terminal body ground

· Start from the Tc terminal side and alternate between Tc and AB terminals at 1 second intervals.

Ground the body.

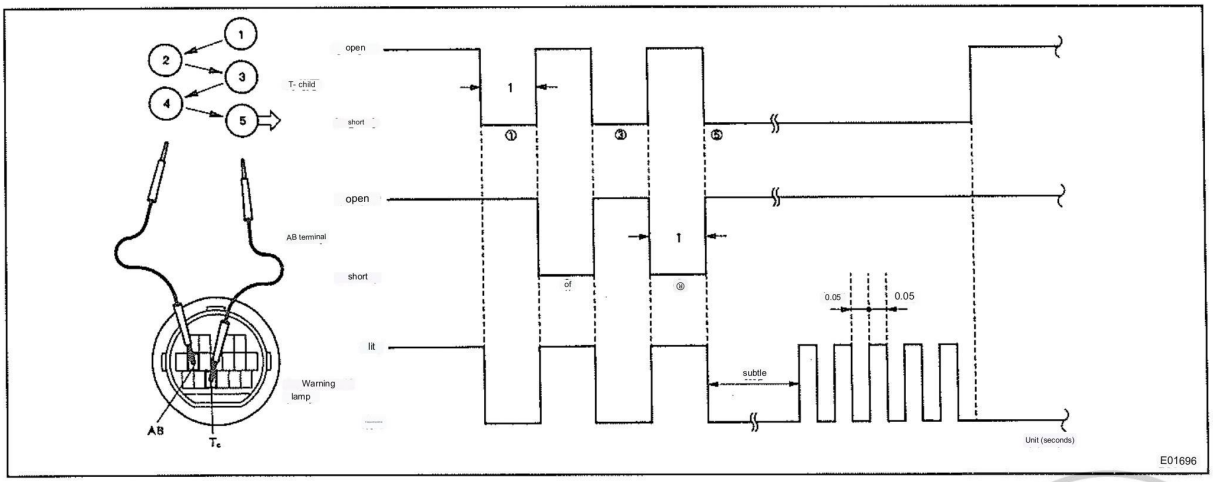
(5) Warning lamp check

· Warning lamp lights up briefly (erasure completion code)

Check.

<Reference> - When alternately grounding the T and AB terminals, release one and ground the other at the same time.·

If the erase completion code is not output, try again.



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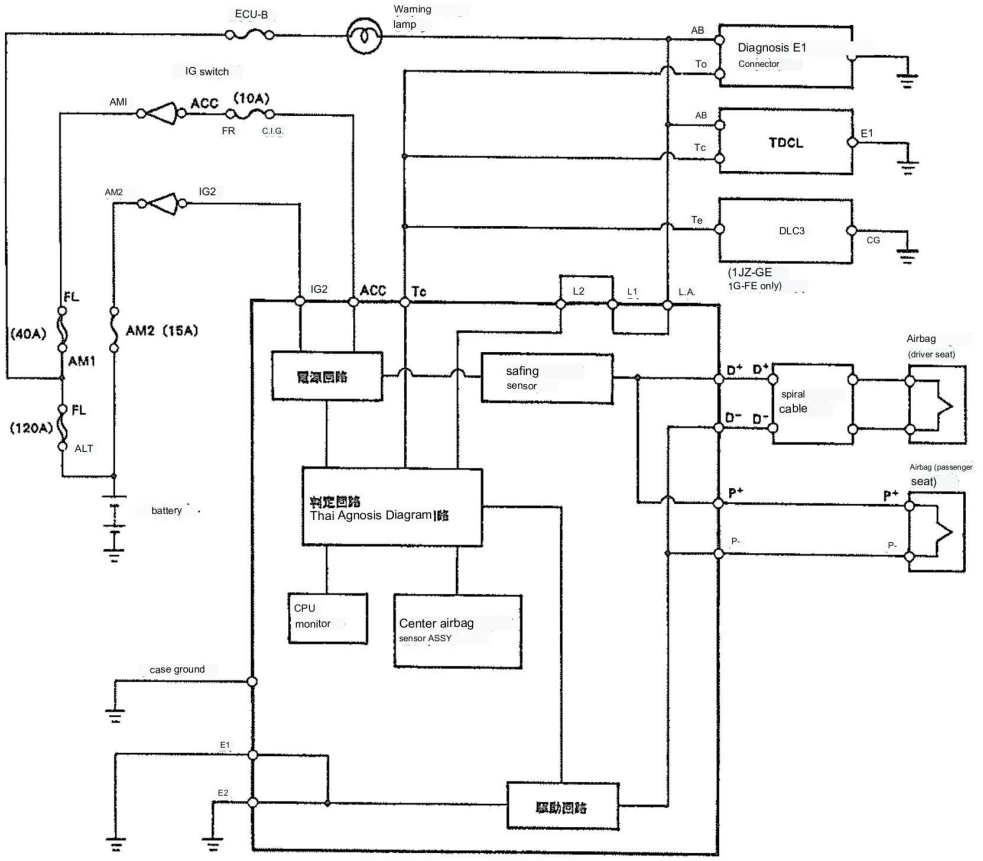
circuit | 図

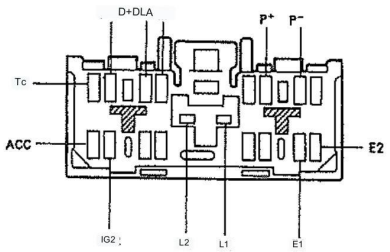
Made by Nippon Densei

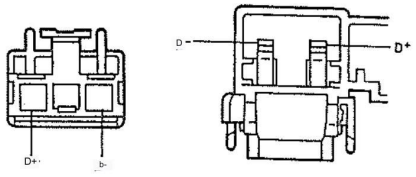


Center airbag sensor ASSY

spiral cable

center airbag sensor

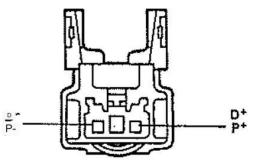




(Center airbag sensor ASSY)

(Airbag side)

Airbag



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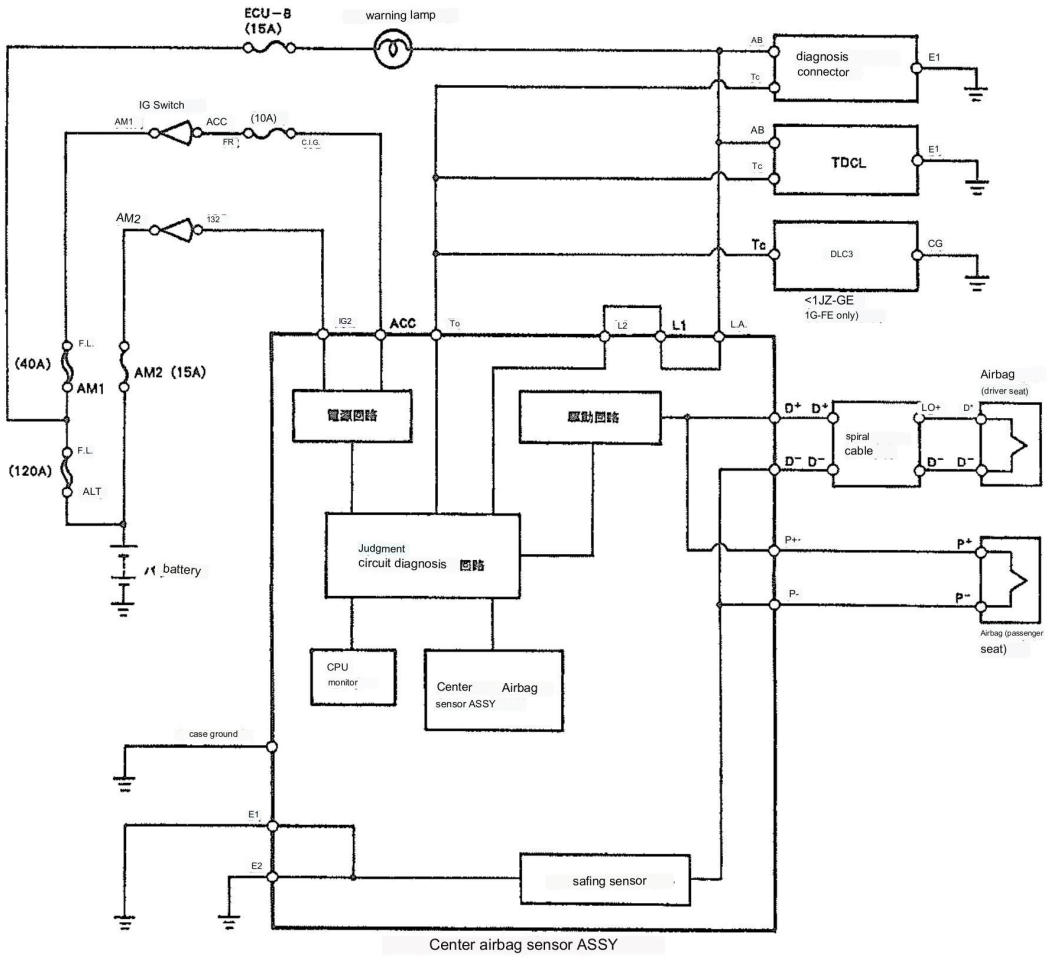

Center airbag sensor ASSY

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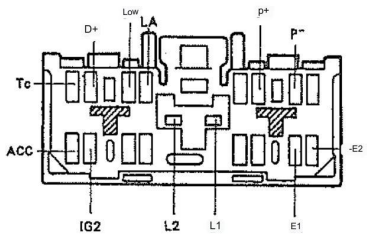
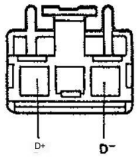
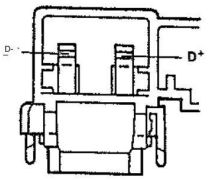
center airbag sensor



spiral cable

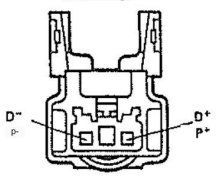


(Center airbag sensor ASSY 側)



(Airbag 側)

Airbag



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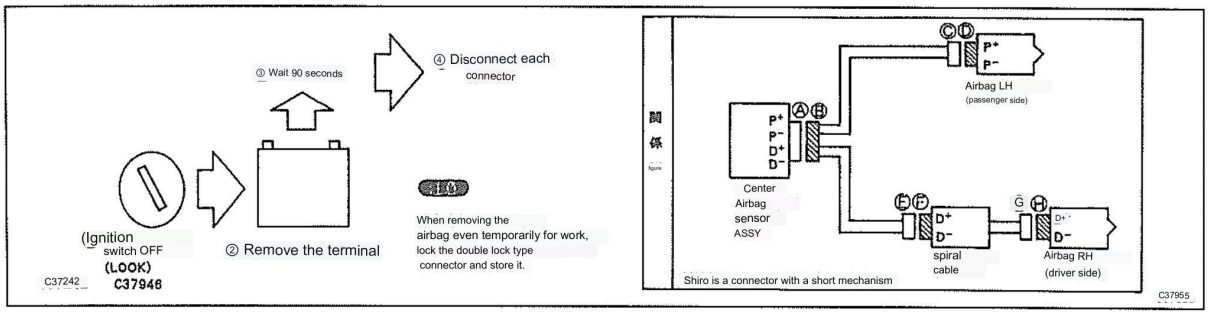
Preparation before inspection

(Note) When troubleshooting, short circuit, voltage and resistance measurements should be taken from the W/H side of the connector.



Diagnosis code and problem phenomenon list

(Note) After understanding the problem phenomenon, follow the corresponding flowchart. Inspection to.

1 How to read the flowchart

- · · · · · · Items to work on
- · · · · · · Items to check
- · · · · · · Failure factor

item	diagnosis code	診断内容	備考	Applicable flow chart
Troubleshooting by diagnosis code	11	· W/H between center airbag sensor ASSY and airbag is shorted to ground. · Center airbag in center airbag sensor ASSY The sensor is always on. ·	———	1
	12	Center airbag sensor ASSY ~ W/H between airbags There is a short circuit to the power supply.	———	2
	13	· The ignition device is short-circuited inside the airbag (driver's side). · Center airbag sensor ASSY~ Airbag (driver's seat side) There is a short circuit between W/H.	———	3
	14	· The ignition device is disconnected inside the airbag (driver's side). · Center airbag sensor ASSY ~ Airbag (driver's side) W/H is disconnected.	———	4
	31	· The center airbag sensor ASSY is malfunctioning.	———	5
	53	- There is a short circuit in the ignition device inside the airbag (passenger side). · The W/H between the center airbag sensor ASSY and the airbag (passenger seat side) is short-circuited.	———	6
	54	· The ignition device inside the airbag (passenger side) is disconnected. • The W/H between the center airbag sensor ASSY and the airbag (passenger seat side) is disconnected.	———	7

Trouble By Shooting	Malfunction phenomenon	Inspection area	Applicable blow chart
	The warning lamp is lit, but the diagnosis code is displayed normally.	Power supply voltage system	8
	· Warning lamps are displayed randomly.	Center airbag sensor ASSY replacement	———
	· Warning lamp stays on when IG switch is OFF.	Warning lamp system	9
	• The warning lamp does not illuminate even if the ignition switch is turned to ACC or ON.		10
	· Diagnosis code is not displayed. · Diagnosis code is always output.	Diagnosis Connector Tc Terminal System	11

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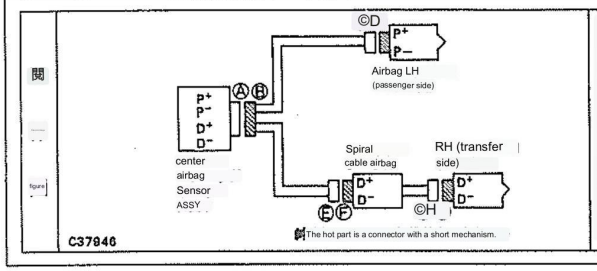
Troubleshooting by diagnostic code

1	Diag	11	Ignition circuit (short to ground)

explanation

· The ignition circuit consists of the center airbag sensor ASSY, spiral cable (with built-in combination switch), and airbag. This circuit outputs an ignition (deployment) signal when the deployment conditions are met, causing the airbag to deploy.·

When code "11" is stored, if the fault cannot be determined even after inspection according to the flowchart below, check the airbag related parts. Replace everything (including the wiring harness).



Problem details

No ① D+ ~ D', P+ ~ P terminals are shorted to ground.
② Airbag internal failure
③ Internal failure of spiral cable
④Center airbag sensor ASSY internal failure
(center airbag sensor circuit always ON. Internally D, D-, P+, P- shorted to ground. Exit code 11 failure of the power supply circuit)

Preparation before inspection (see "Preparation before inspection")

Inspect short circuit between connector B and connector G

Check the resistance value between D and D terminals of connector G and body ground.
Reference value ∞Ω

NO. → Disconnect connectors E and F

YES

Inspect short circuit between connector B and connector C

Resistance between P+ and P- terminals of connector C and body ground
Check the value
Reference value ∞Ω

YES

NO. → Wire harness (between B and C), repair or replacement of connectors B and C

Connect connectors A and B

Short-circuit between the D+ and D terminals of connector G and between the P and P terminals of connector C.

Connect the battery terminals, turn the ignition switch to ACC or ON, and wait 20 seconds.

to the next page

Spiral cable short circuit inspection

Resistance between D+, D terminals of connector G and body ground
Check the value
Standard value 8Ω

YES

NO. → spiral cable replacement

Wire harness (between B and E) short circuit inspection

Resistance between D+ and D terminals of connector B and body ground
Check the value
Reference value ∞Ω

YES

NO. → Wire harness (between B and E), connector Repair or replacement of B and E

The problem was restored to normal by attaching and disconnecting the connector during inspection work, so try to reproduce the problem again using the reproduction method (see "Review"). If the problem cannot be determined even after performing the reproduction method, check the airbag system parts. (including wire harness)

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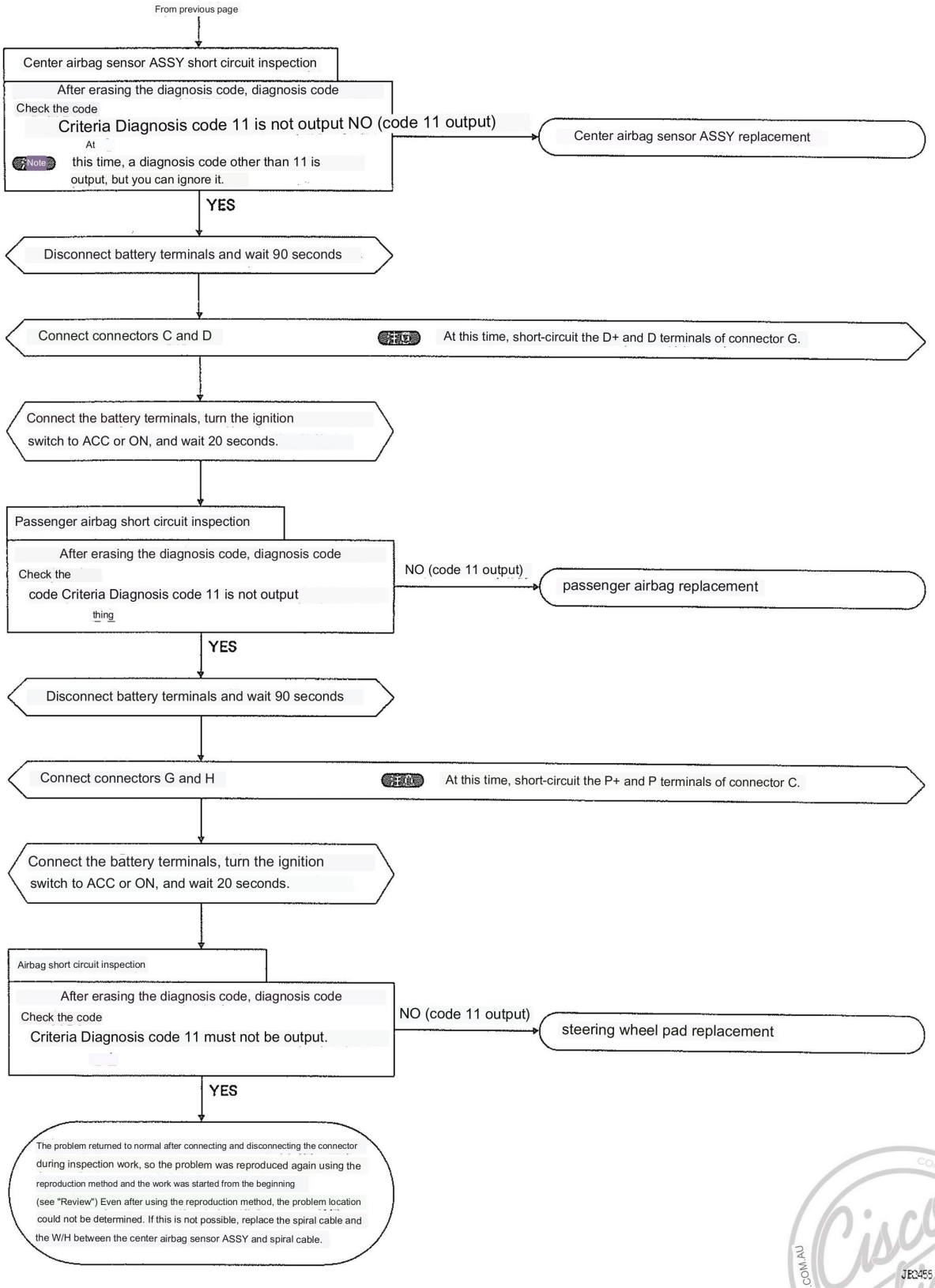

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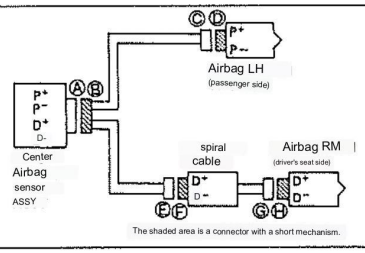
2	Diag 12	Ignition circuit (shorted to +B)

explanation

The ignition circuit consists of the center airbag sensor ASSY, spiral cable (with built-in combination switch), and airbag. This circuit outputs an ignition (deployment) signal when the deployment conditions are met, causing the airbag to deploy.

関係図



No ① D+ ~ D', P+ ~ P- terminals are shorted to +B

Fault ② Airbag internal failure

③ Internal failure of spiral cable Wing

④ Center airbag sensor ASSY internal failure :

(Internally shorted to D+, D, P+, and P+B.

Failure of the circuit that detects code 12)

Thin

Preparation before inspection (see "Preparation before inspection")

Connect the battery terminals and turn on the ignition. switch to ACC or ON.

Inspect short circuit between connector B and connector G

Voltage between D+, D- terminals of connector G and body ground NO

Check

Standard OV

YES

Inspect short circuit between connector B and connector C

Check the voltage between the P+ and P- terminals of the vehicle side W/H connector (C) of the passenger airbag and body ground.Reference value OV

YES NO.

Wire harness (between B and C), repair or replace connectors B and C

Connect connectors A and B

Short-circuit between the D+ and D terminals of connector G and between the P+ and P- terminals of connector C.

Connect the battery terminals and turn the ignition switch to ACC or ON for 20 seconds. stand by

to the next page

Disconnect connectors E and F

Spiral cable short inspection

Voltage between D+ and D- terminals of connector G and body ground

Check the reference value OV

YES NO.

spiral cable replacement

Wire harness (between B and E) short circuit inspection

Voltage between D", D' terminals of connector B and body ground

Check the reference value OV

YES NO.

Wire harness (B to E), repair or replace connectors B and E

The problem was restored to normal after connecting and disconnecting the connector during inspection work, so we used the reproduction method to reproduce the problem and started the work from the beginning (see "Death theory") Even after using the reproduction method, the problem location remained If it cannot be determined, replace the spiral cable and the W/H between the center airbag sensor ASSY and spiral cable.

14

JR2504

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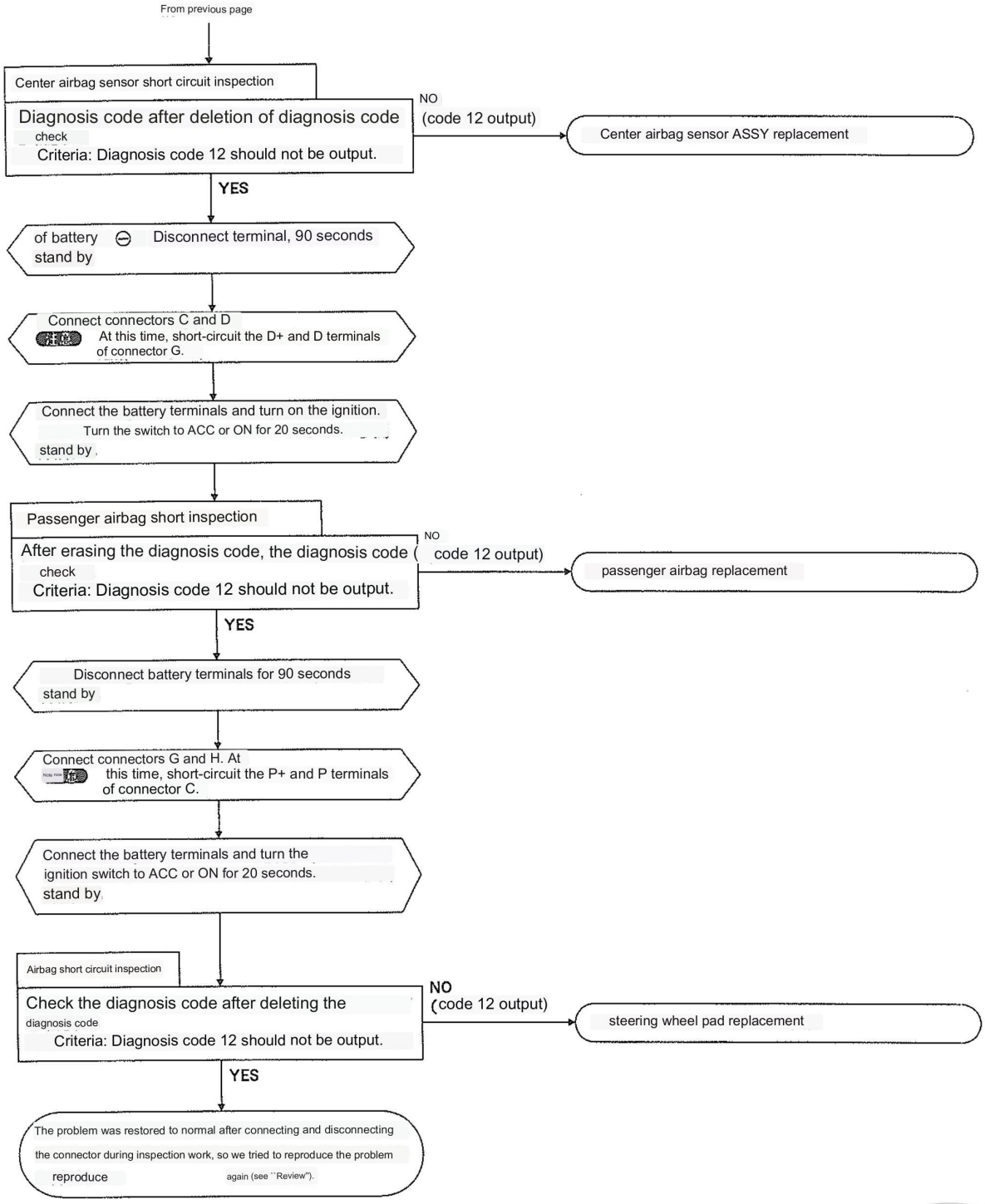

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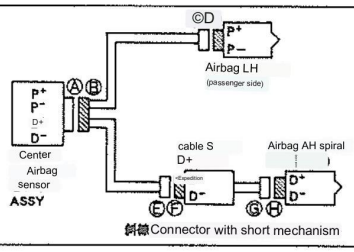
3	Diag 13	Ignition circuit (short circuit between D~D terminals)

Explanation

・ The ignition circuit consists of an airbag sensor assembly, a spiral cable (with a built-in combination switch), and an airbag. This circuit outputs an ignition (deployment) signal when the deployment conditions are met, causing the airbag to deploy.

関係図



内容詳細

No ① There is a short circuit between D+ and D terminals.
③ ② Airbag internal failure
④ Spiral cable internal failure
Center airbag sensor ASSY internal failure
(D+ and D are shorted internally. The circuit that detects code 13 is faulty.)

Preparation before inspection (see "Preparation before inspection")

Inspect short circuit between connector B~ connector G
Place a tester rod on the D+ and D terminals of connector G and check the resistance value between connector B and connector G.
基準値 8 Ω
注意 At this time, release the short mechanism of connector.

NO. → Disconnect connectors E and F

B YES

Connect connectors A and B

Center airbag sensor ASSY short circuit inspection
Check the diagnosis code after deleting the diagnosis code
Criteria Diagnosis code 13 should not be output

YES

NO (code 13 output) → Center airbag sensor ASSY replacement

Disconnect battery terminals and wait 90 seconds

Connect connectors G and H

Connect the battery terminals, turn the ignition switch to ACC or ON, and wait 20 seconds.

Airbag short circuit inspection
After erasing the diagnosis code, check the diagnosis code
Criteria: Diagnosis code 13 should not be output.

NO (code 13 output) → steering wheel pad replacement

YES

The problem was restored to normal after connecting and disconnecting the connector during inspection work, so the problem was reproduced again using a reproduction method (see ``Review'').

Spiral cable short inspection
Insert a tester rod into the D+ D terminals of connector G to check the resistance value between the spiral cables
基準値 ∞Ω
注意 At this time, release the short mechanism of connector F.

YES

NO → spiral cable replacement

Wire harness (between B and E) short circuit inspection
Place a tester on the connector ED D terminal and check the resistance value of the wire harness (between B and E).
Reference value
注意 ∞Ω At this time, release the short mechanism of connector B

YES

NO. → Wire harness (between B and E), repair or replace connectors B and E

The problem was restored to normal after connecting and disconnecting the connector during inspection work, so we used a reproduction method to reproduce the problem again (see ``Review'').

14

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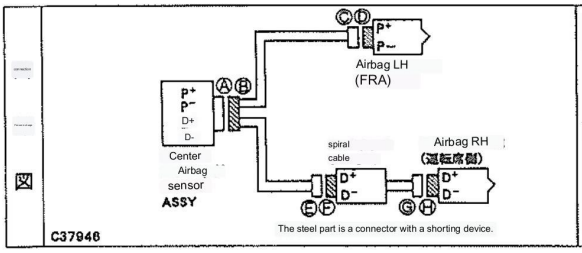
4	Diag 14	Ignition circuit (disconnection ~ between D+ D terminals)

Explanation

The ignition circuit consists of the airbag sensor ASSY, spiral cable (with built-in combination switch), and airbag. This circuit outputs an ignition (deployment) signal when the deployment conditions are met, causing the airbag to deploy.



No ① Disconnection between terminals D and D

② Internal failure of the airbag

③ Internal failure of spiral cable

④ Center airbag sensor ASSY internal failure

(D+ and D are disconnected internally. Code 14 is detected.

failure of the circuit)

Preparation before inspection (see "Preparation before inspection")

Check for disconnection between connector B and connector G

Place a tester rod on the D and D terminals of connector G and check the resistance value between connector B and connector G.

Standard value 1Ω or less

NO. → Disconnect connectors E and F

YES

Connect connectors A and B

Short-circuit between the D+ and D terminals of connector G and between the P+ and P terminals of connector C.

Connect the battery terminals and turn on the ignition

Turn the switch to ACC or ON and wait 20 seconds.

Center airbag sensor ASSY wire breakage inspection

Check the diagnosis code after erasing the diagnosis code. Make sure that the reference diagnosis code 14 is not output.

YES

NO (code 14 output) → Center airbag sensor ASSY replacement

to the next page

Spiral cable disconnection inspection

Place the tester rod on the D+ and D terminals of connector G, and Check the resistance value between the spiral cables

Standard value 1Ω or less

YES

NO. → spiral cable replacement

Wire harness (B to E) disconnection check

Check the resistance value of the wire harness (between B and E) by inserting a tester rod into the D+ and D- terminals of connector E.

Standard value 1Ω or less

YES

NO. → Wire harness (between B and E), repair or replace connectors B and E

The problem was restored to normal after connecting and disconnecting the connector during inspection work, so the problem was reproduced again using a reproduction method (see ``Review").

14

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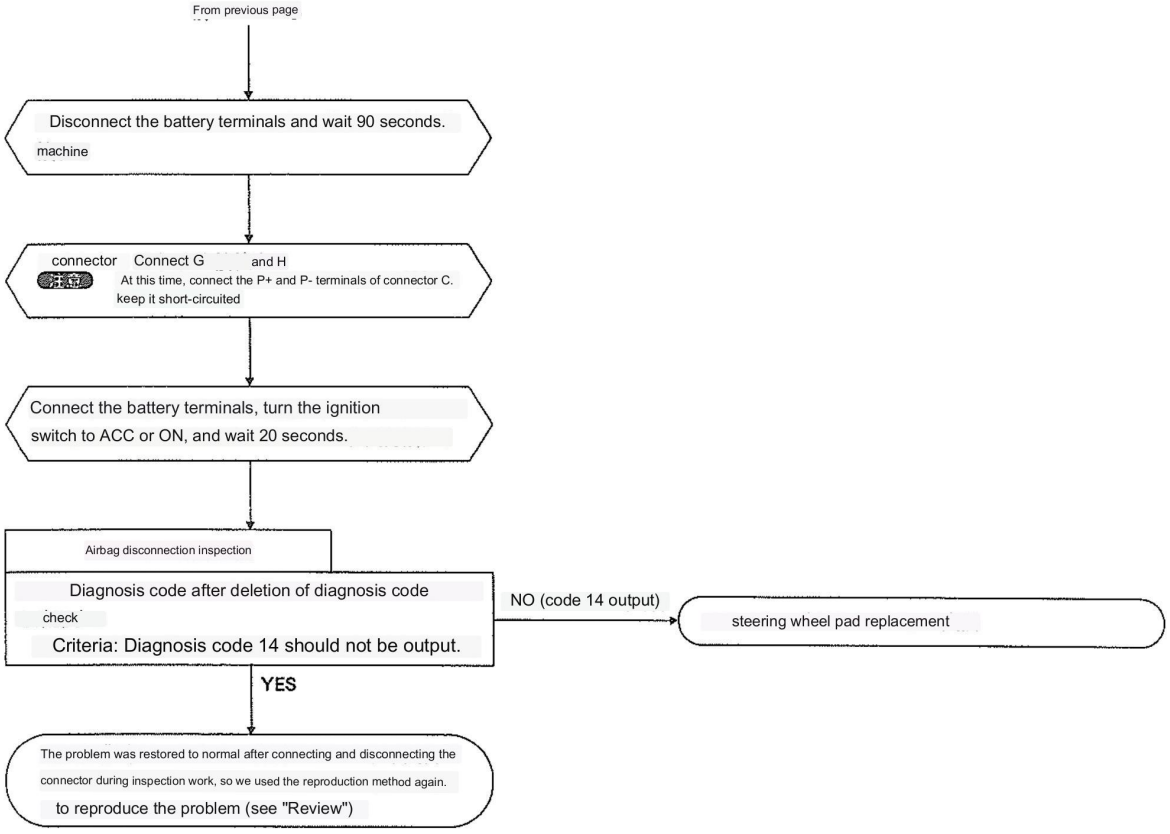

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5	code 31	Center airbag sensor ASSY internal failure

explanation

The center airbag sensor ASSY is a safing sensor, airbag ignition control, drive circuit, diagnosis circuit, etc.
It is configured.

Problem details	① Center airbag sensor ASSY internal failure

Turn ignition switch OFF (LOCK) for 15 seconds
to (1)

Turn the ignition switch to ACC or ON.
Wait 20 seconds (2)

Repeat (1) (2) 4 times

Short-circuit between the Tc and E terminals of TDCL,
Check the code
and diagnosis standard Diagnosis code 31 is not output.

NO (code 31 output) → Center airbag sensor ASSY replacement

YES

During inspection work, the problem returned to normal, so we used
the reproduction method to reproduce the problem again.
(See "Review")

14

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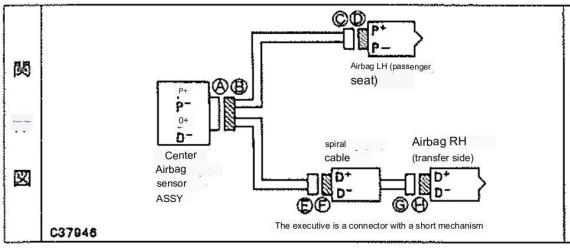
6	code 53	Ignition circuit (short circuit between P ~P- terminals)

Explanation

The ignition circuit consists of the center airbag sensor ASSY, spiral cable (with built-in combination switch), and airbag. ing. This circuit outputs an ignition (deployment) signal when the deployment conditions are met, causing the airbag to deploy.



No ① Short circuit between P+ and P terminals ② Airbag internal failure
If ③ Center airbag sensor ASSY internal failure (PP is shorted internally. Failure of the circuit that detects code 53)
Thin

Preparation before inspection (see "Preparation before inspection")

Inspect short circuit between connector B and connector C

Place the tester rod on the P+ and P- terminals of connector C.
Check the resistance value between connector B and connector C
Reference value
∞Ω At this time, release the short mechanism of connector B

NO. → Wire harness (between B and C), repair or replace connector B and connector C

YES

Connect connectors A and B

Connect the battery terminals, turn the ignition switch to ACC or ON, and wait 20 seconds.

Center airbag sensor ASSY short circuit inspection

After clearing the diagnosis code, check the diagnosis code
Criteria Diagnosis code 53 should not be output

NO (code 53 output) → Center airbag sensor ASSY replacement

YES

Disconnect battery terminals and wait 90 seconds

Connect connectors C and D

Connect the battery terminals, turn the ignition switch to ACC or ON, and wait 20 seconds.

Passenger airbag short inspection

After erasing the diagnosis code, check the diagnosis code
Criteria: Diagnosis code 53 should not be output.

NO (code 53 output) → Passenger airbag ASSY replacement

YES → The problem was restored to normal after connecting and disconnecting the connector during inspection work, so we used a reproduction method to reproduce the problem again (see "Review").

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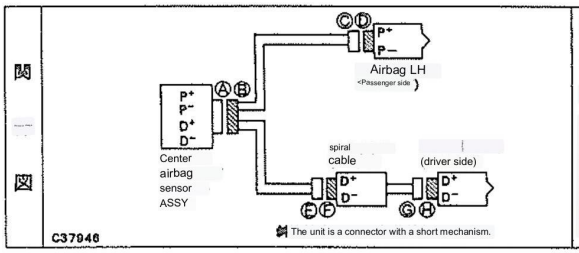
7	code 54	Ignition circuit (disconnection between P+ and P- terminals)

explanation

The ignition circuit consists of the center airbag sensor ASSY, spiral cable (with built-in combination switch), and airbag. This circuit outputs an ignition (deployment) signal when the deployment conditions are met, causing the airbag to deploy.



Content details

No ① Disconnection between P+ and P terminals

② Internal failure of the airbag

③ Center airbag sensor ASSY internal failure

(PP is disconnected internally.

Failure of the circuit that detects code 54)

Preparation before inspection (see "Preparation before inspection")

Check for disconnection between connector B and connector C

Place a tester rod on the P+ and P- terminals of connector C and check the resistance value between connector B and connector C.

Standard value 1Ω or less

NO. → Wire harness (between B and C), connectors B and C repair or replacement of

YES

Connect connectors A and B

Short-circuit between D+ and D- terminals of connector G and between connector CP+ and P- terminals.

Connect the battery terminals, turn the ignition switch to ACC or ON, and wait 20 seconds.

Center airbag sensor ASSY wire breakage inspection

After erasing the diagnosis code, check the diagnosis code

Criteria: Diagnosis code 54 should not be output.

NO (code 54 output) → Center airbag sensor ASSY replacement

YES

Disconnect battery terminals and wait 90 seconds

Connect connectors C and D (Note ①) At this time, short-circuit the D+ and D terminals of connector G.

Connect the battery terminals, turn the ignition switch to ACC or ON, and wait 20 seconds.

Passenger airbag disconnection inspection

After erasing the diagnosis code. Check the diagnosis code

Criteria: Diagnosis code 54 should not be output.

NO (code 54 output) → Passenger airbag ASSY replacement

YES → The problem was restored to normal after connecting and disconnecting the connector during inspection work, so we used a reproduction method to reproduce the problem again. (See "Review")

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Troubleshooting by problem phenomenon

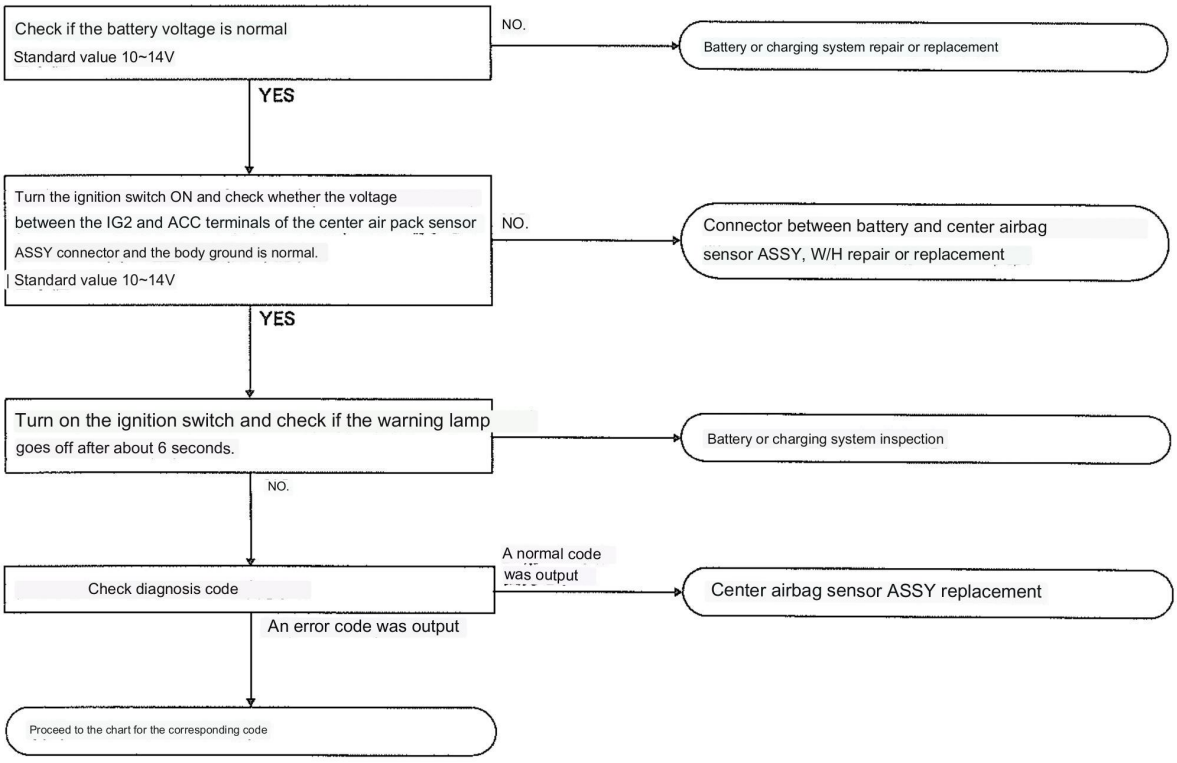
8	power supply system

explanation

- The airbag system is equipped with a boost circuit (DC-DC converter) inside the center airbag sensor assembly to ensure reliable activation even when the battery voltage drops. In the unlikely event that the battery voltage drops for some reason, the center airbag sensor ASSY will turn on the warning lamp to warn you. After that, if the battery voltage returns to normal, the warning lamp will turn off after about 10 seconds. This
- problem differs from others in one point: ① When the problem is resolved, the warning lamp will turn off after about 10 seconds.

Problem details

diagnosis code	defect 内 capacity
Warning lamp on and normal code	① Decrease in vehicle battery voltage



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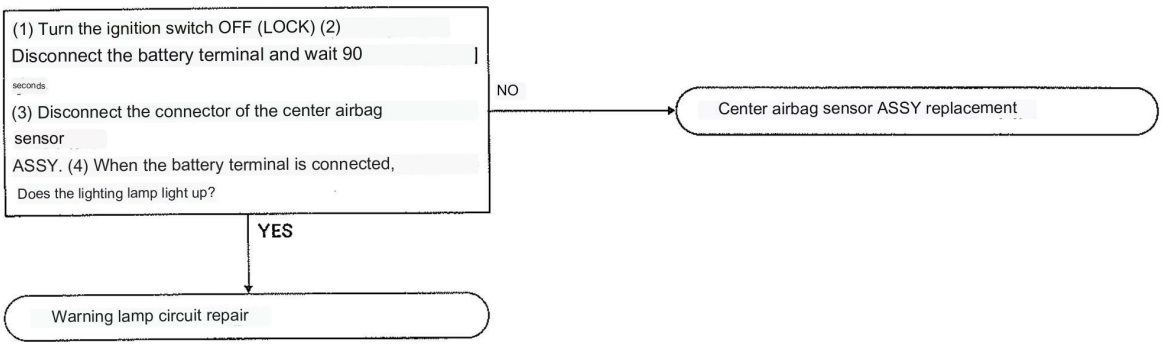
[salutation]

9	Warning lamp stays on when IG switch is OFF

Explanation

- If the system is normal, the warning lamp will light up for about 6 seconds after turning the ignition switch to ACC or ON, and then turn on. Lights out.
- In the unlikely event that a system malfunction occurs, the warning lamp will continue to illuminate even after 6 seconds have passed
- to alert the driver. Also, if the ignition switch is in the ACC or ON state and the Tc-E1 terminals of the TDCL are shorted, the warning lamp will flash and a diagnosis code will be displayed.



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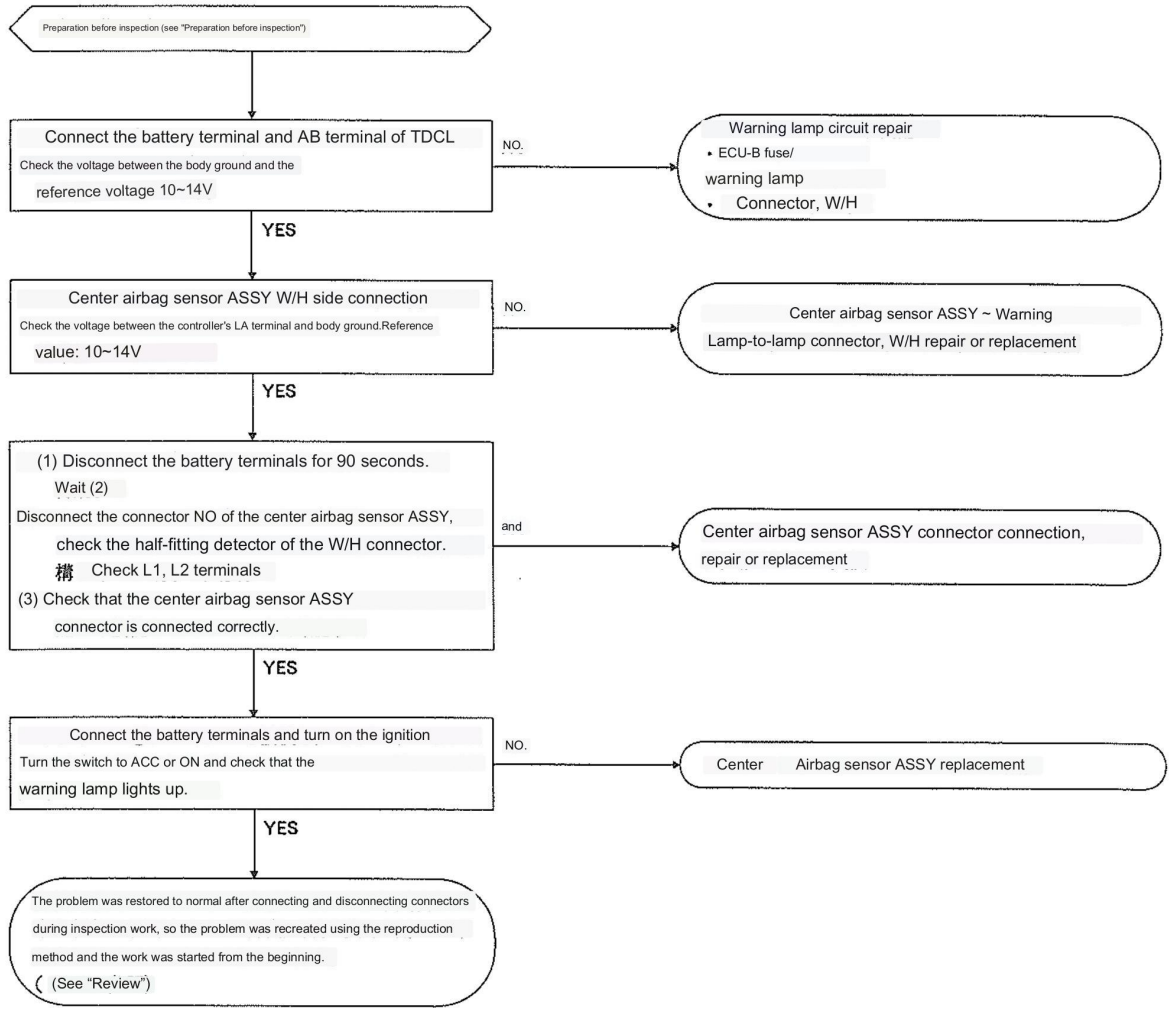
10	Warning lamp not lit

explanation

· If the system is normal, the warning lamp will illuminate for approximately 6 seconds after the ignition switch is turned to ACC or ON, and then turn off.

- In the unlikely event that a system malfunction occurs, the warning lamp will remain on to alert the driver even after 6 seconds have elapsed.



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11	Tc terminal circuit

explanation

By shortening the distance between the Tc and E1 terminals of TDCL, the center airbag sensor ASSY is set to diagnosis mode and outputs a diagnosis code, which is displayed by blinking the warning lamp.

Is the diagnosis code not displayed or is it always output?
Is it always output?

Do not show

Turn the ignition switch to ACC or ON, and check the voltage between the TcE and terminals of TDCL.Reference value: 10~14V

YES

NO.

TDCL Te terminal circuit inspection and repair

If the ignition switch is set to ACC or ON and the connector is connected to the center airbag sensor ASSY, and there is a short circuit between the connector Tc terminal of the center airbag sensor ASSY and the body ground, will a diagnosis code be displayed?

YES

NO.

Center airbag sensor ASSY replacement

Inspection and repair of W/H Tc circuit between center airbag sensor ASSY ~ TDCL

Turn the ignition switch OFF (LOCK) and Disconnect Lee's terminal and wait 90 seconds

Remove the center airbag sensor ASSY connector.
Measure the resistance between the Tc terminal of the W/H side connector of the sensor airbag sensor ASSY and the body ground.
determine
Standard value 8Ω

YES

NO.

Center airbag sensor ASSY ~ TDCLW/H Tc circuit inspection and repair

Center airbag sensor ASSY replacement

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Individual inspection

spiral cable

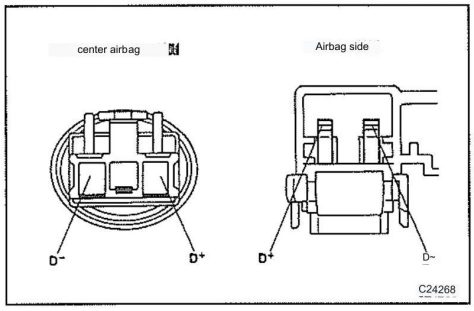
1 Spiral cable inspection

(1) Measure the resistance between each terminal of the spiral cable connector.

standard

Measuring conditions	Measurement terminal symbol	resistance
Normal condition	D+ ↔ D+	1 Ω below
Short mechanism release ("Connector short machine" - (See "Release of connector short mechanism")	D+ ↔ D−	∞ Ω
Normal situation	D+ ↔ D−	12 or less
Normal situation	D− ↔ D−	12 or less

JA1900



Do not let the tester leads make strong contact with the terminals.

Center airbag sensor ASSY

1 Center airbag sensor ASSY inspection

(1) Check the center airbag sensor ASSY for troubleshooting.

Follow the instructions provided.

("troubleshooting"

— "Troubleshooting using flowcharts"

- "Diagu Code 32" Part KO

T0048705

Precautions when disposing of airbags

Precautions when disposing of airbags (steering wheel pads and passenger airbags)

1 Do it outdoors in a safe place.

2 When deploying the bag, use the SST to move at least 5m from the steering wheel pad and passenger airbag.

Leave.

3 The unfolded bag is extremely hot and should not be used for 30 minutes after unfolding.

Leave it alone.

4 Do not splash water on the deployed airbag.

5 Wear safety glasses and gloves when handling unfolded bags.

use

6 Place the unfolded bag in a plastic bag, seal it, and dispose of it.

7 Always wash your hands with water when you finish working.

8 Never dispose of the steering wheel pad or passenger airbag in an undeployed state.

9 When disposing of the steering wheel pad and passenger airbag that have already been deployed, carry out the work according to the procedures for "airbag disposal."

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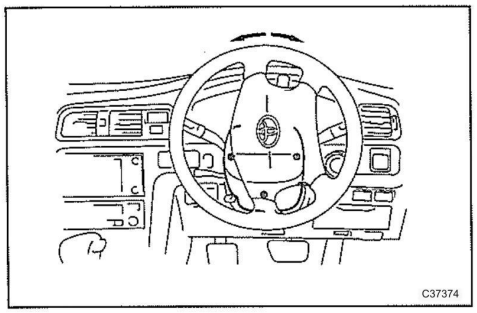
Airbag (Steering wheel pad and passenger airbag) Disposal

Deployment guidelines when discarding a vehicle equipped with an airbag system

1 Check precautions for handling

(work ("Precautions" - "Precautions for handling work")

driver's side



1 Disconnect the

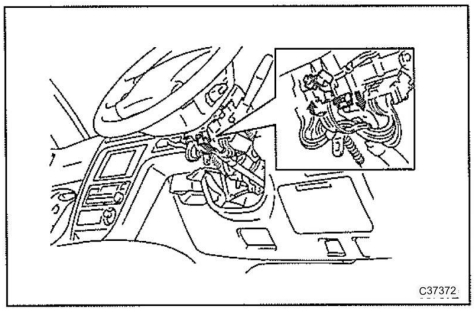
power supply (see "Precautions" and "General Metal Precautions")

2 Removing the stelling column cover lower

(1) Rotate the steering wheel 90 degrees to the right and remove the screw on the top right side of the column cover, and do the same on the left side.

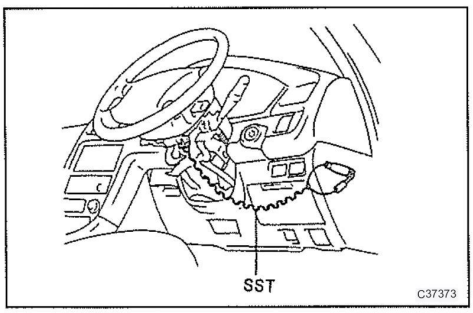
vinegar.

(2) Remove the screw and remove the steering column cover lower.



3 Disconnect the airbag connector

(1) Disconnect the airbag connector from the spiral cable.



4 Airbag deployment

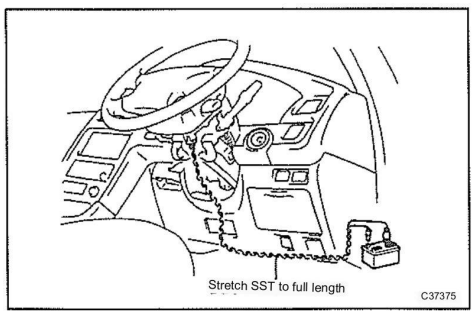
For steering wheels and steering wheel pads

Make sure there is no looseness.

(1) Short-circuit the SST alligator mouth and terminal.

S S T 09082-00710

(2) Connect the SST connector and the connector (yellow 2P).



(3) Place the battery in the position where the SST is fully extended from the

- vehicle. At this time, close all doors and windows.
- Guide the vehicle and confirm that there are no people around.

(4) After confirming the safety of the vehicle interior and surrounding area once again, connect the SST alligator to the

(5) Connect the SST terminal to battery ④ and deploy the airbag.

Be sure to shout out a warning before deploying.

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battery. CONTENT UPLOAD TED BY
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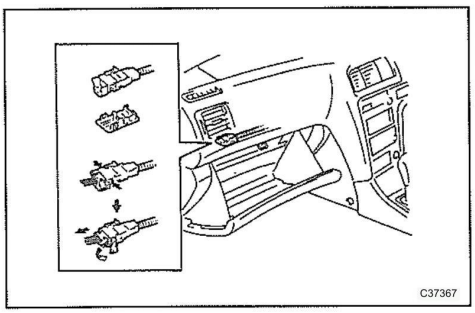
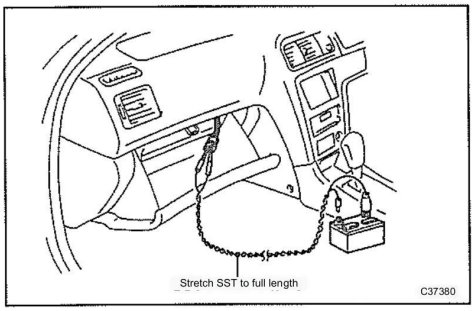




passenger side

1 Power disconnection

(See "Precautions" and "Handling/Work Precautions")

2 Glove compartment door finish plate removed

death

(1) Remove the finish plate.

(2) Remove the airbag connector.

(3) Disconnect the passenger airbag connector and push it into the opening hole on the top of the glove box.

3 Airbag deployment

•Caution Make sure there is no play in the passenger airbag.

(1) Short-circuit the SST pin and terminal.

S S T 09082-00710

(2) Connect the SST connector and the connector (yellow 2P). (3) Place the battery in the position where the SST is fully extended from the vehicle.

CAUTION • Close all doors and windows at this time.・

Confirm that there are no people in or around the vehicle.

(4) After confirming the safety of the vehicle interior and surrounding area once again, Connect the mouth to the battery day.

(5) Connect the SST terminal to the battery ⊕ and deploy the airbag.

Be sure to shout out a warning before deploying.

T0043708

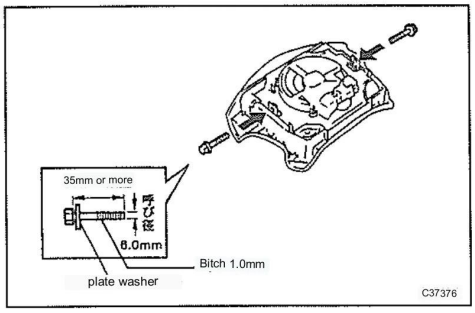
steering wheel pad and

Deployment guidelines when disposing of individual passenger airbags

1 Check the precautions for handling

work (see "Precautions" — and "Precautions for handling work")

driver's side



1 Power disconnection

(See "Precautions" and "General Precautions")

2 Remove the steering wheel

pad (see "Steering" - "Tilt steering column ASSY")

3 Remove the steering wheel pad connector (1)

Inflate the connector on the back of the steering wheel pad.

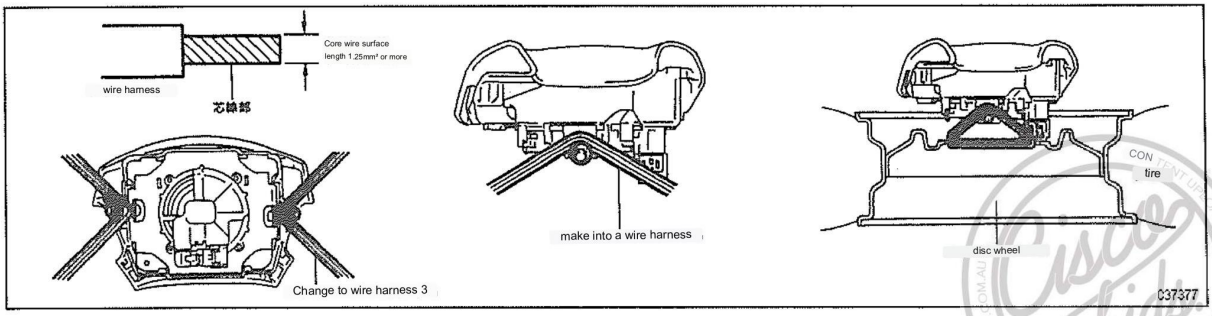
remove it from the tar cover.

4 Steering wheel pad fixing

(1) Insert a plug into each of the two mounting holes on the steering wheel pad.

Thoroughly tighten the bolt through the rate washer by hand.

Bolt Length under neck 35mm or more Pitch 1.0mm Nominal diameter 6.0mm



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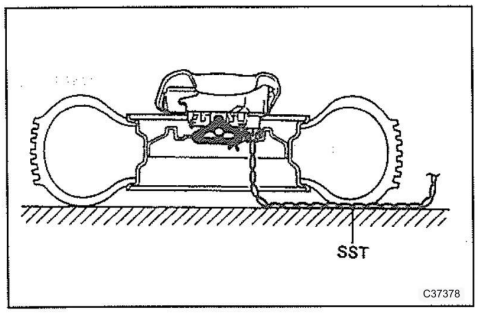
(2) Using automotive wire harness (core wire cross-sectional area 1.25mm or more) Fix the steering wheel pad to the disc wheel. Note: Strictly observe the instructions. If you do not follow the instructions, the deployed air It is extremely dangerous for the bag to fly off.

① Approximately 1 ton of force is applied to the wire harness when the airbag is deployed, so triple the wire harness and secure it firmly. ② Be sure to install the bag so that the unfolded side faces the center of the tire.

5 Airbag deployment

Airbag deployment must be performed outdoors. (1) Short-circuit the SST alligator mouth and terminal.

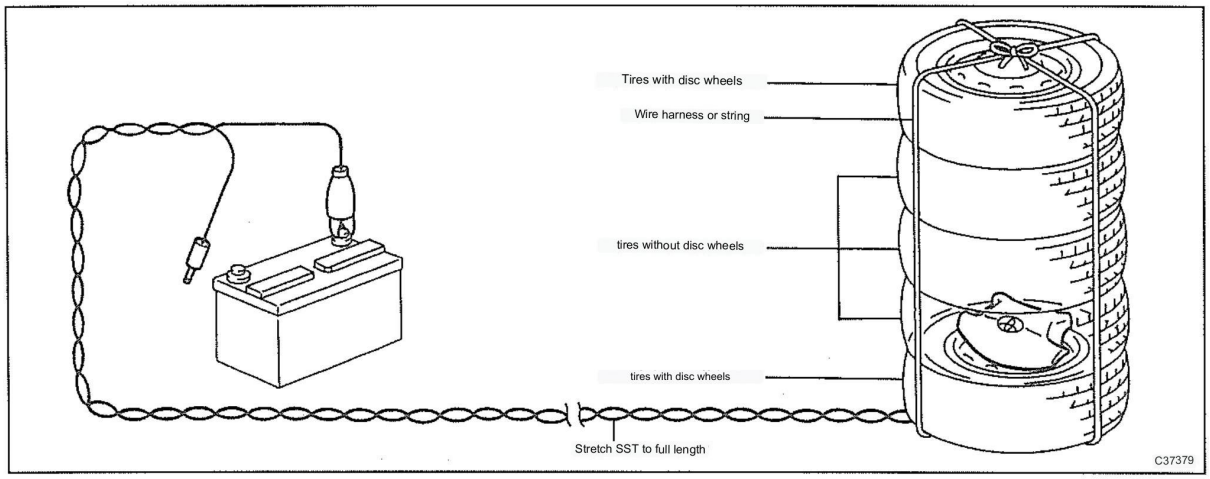
S S T 09082-00710



(2) Connect the SST connector and airbag connector (yellow 2P) under the disc wheel.

(3) Stack three or more tires on top of the disc wheel with the steering wheel pad fixed as shown in the diagram, and place the disc wheel on top. Place the tire with the tire attached.

(4) Secure the tires together with wire harnesses, strings, etc. to prevent them from scattering when deployed.



(5) After confirming the safety of the vehicle interior and surrounding area once again, the SST crocodile Connect the mouth to the battery day. (6) Connect the SST terminal to the battery ⊕ and deploy the airbag.

Note: Be sure to shout out a warning before deploying.

Airbag disposal instructions

Never dispose of the steering wheel pad in an undeployed state.

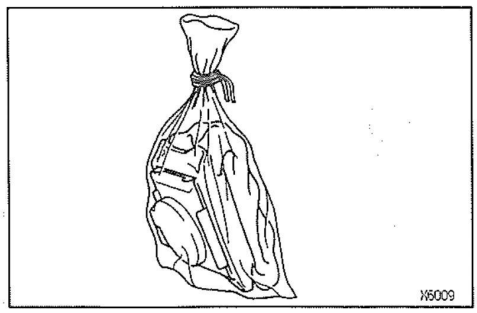
(1) Place the unfolded bag in a plastic bag, seal it, and dispose of it. Note:

unfolded bag is extremely hot, so do not use it for 30 minutes after unfolding. Leave it alone.

· Do not splash water on the unfolded bag.

- Wear safety goggles and gloves when handling the unfolded bag.

· Be sure to wash your hands with water when you finish work.



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Passenger seat 侧

1 Power disconnection

(See "Notes" - "General notes")

2 Passenger airbag ASSY removal

3 Passenger airbag ASSY fixation (1) Use an automobile

wiring harness (core wire cross-sectional area of 1.25mm or more) to secure the passenger airbag ASSY.

Fix the passenger airbag ASSY to the ear.

注意 Strictly observe the following instructions. If you do not follow the instructions, the deployed air

It is extremely dangerous for the bag to fly off.

① Approximately 1 ton of force is applied to the wire harness

when the airbag is deployed, so fix the wire harness firmly.

② Be sure to install the bag so that the unfolded side faces the center of the tire.

4 Airbag deployment

CAUTION Always perform airbag deployment outdoors.

(1) Short-circuit the SST alligator mouth and terminal.

S S T 09082-00710

(2) Connect the SST connector and airbag connector (yellow 2P).

Continue.

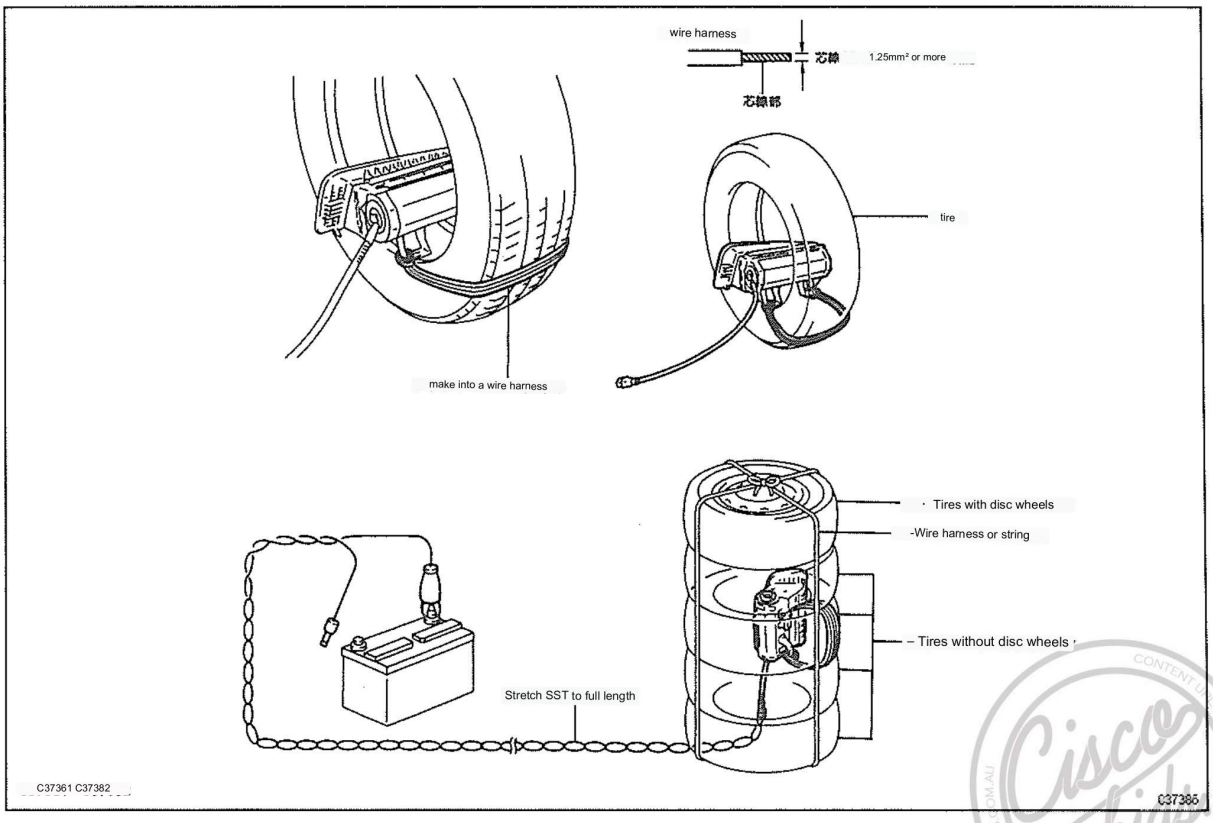
(3) As shown in the diagram, stack two tires and install a passenger airbag.

Stack the tires with fixed gear assemblies, then place one or more tires

on top of that, and a tire with a disc wheel on top. (4) Secure the

tires together with wire harnesses, strings, etc. to prevent them from scattering

when deployed.



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(5) Place the battery in the position where the SST is fully extended from the airbag.

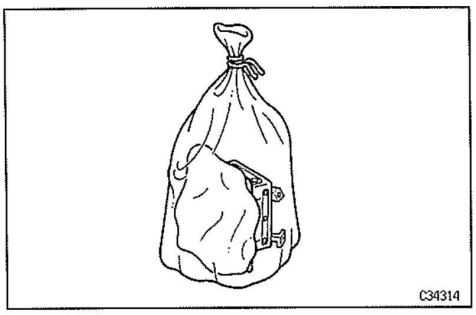
(6) After

confirming the safety of the inside of the vehicle and the surrounding area once again,

Connect the mouth to the battery mother.

(7) Connect the SST terminal to the battery and deploy the airbag. Caution

Be sure to give a loud warning before deploying.



Passenger airbag disposal instructions

Never discard a passenger airbag in an undeployed state (1)

Place the deployed airbag in a plastic bag, seal it, and dispose of it.

The deployed airbag is extremely hot and should not be used for 30 minutes after deployment.

Leave the minutes alone.

- Do not splash water on the deployed airbag.
- Wear safety glasses and gloves when handling a deployed airbag.

to wear.

- Be sure to wash your hands with water when you finish working.

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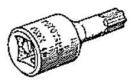
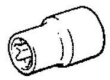
T0048710

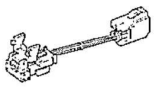
SRS side airbag

Preparation items

tool

	09042-00020	Torx socket wrench (T40)	Side airbag sensor ASSY removal/removal
	09044-00010	Torx socket wrench (E14)	Side airbag ASSY removal and removal

計 器

	09082-00012	Toyota Electrical Tester	Each part is for use as a pointer.
	(09083-00060)	Mini test lead	For inspection of each part
	09082-00710	airbag deployment wire	For side airbag disposal
	09082-00730	Airbag deployment wire subharness 1	For side airbag disposal
	09843-18020	Diagnosis check wire	For diagnosis inspection
Diagnosis check wire 09843-18020 70258			For diagnosis inspection (DLC3)
	09991-50100	Toyota Diagnosis Reader Set	For diagnosis inspection
	09991-50320	Program IC card engine system 3	For diagnosis inspection

Oils and fats Others

Wire harness (core wire cross-sectional area 1.25mm) 52010	For single side airbag disposal
12V battery for cars 52506	For side airbag disposal
1 tire with disc wheel, 4 tires 55004	For single side airbag disposal
Safety glasses, gloves, plastic bags 72000	For side airbag disposal

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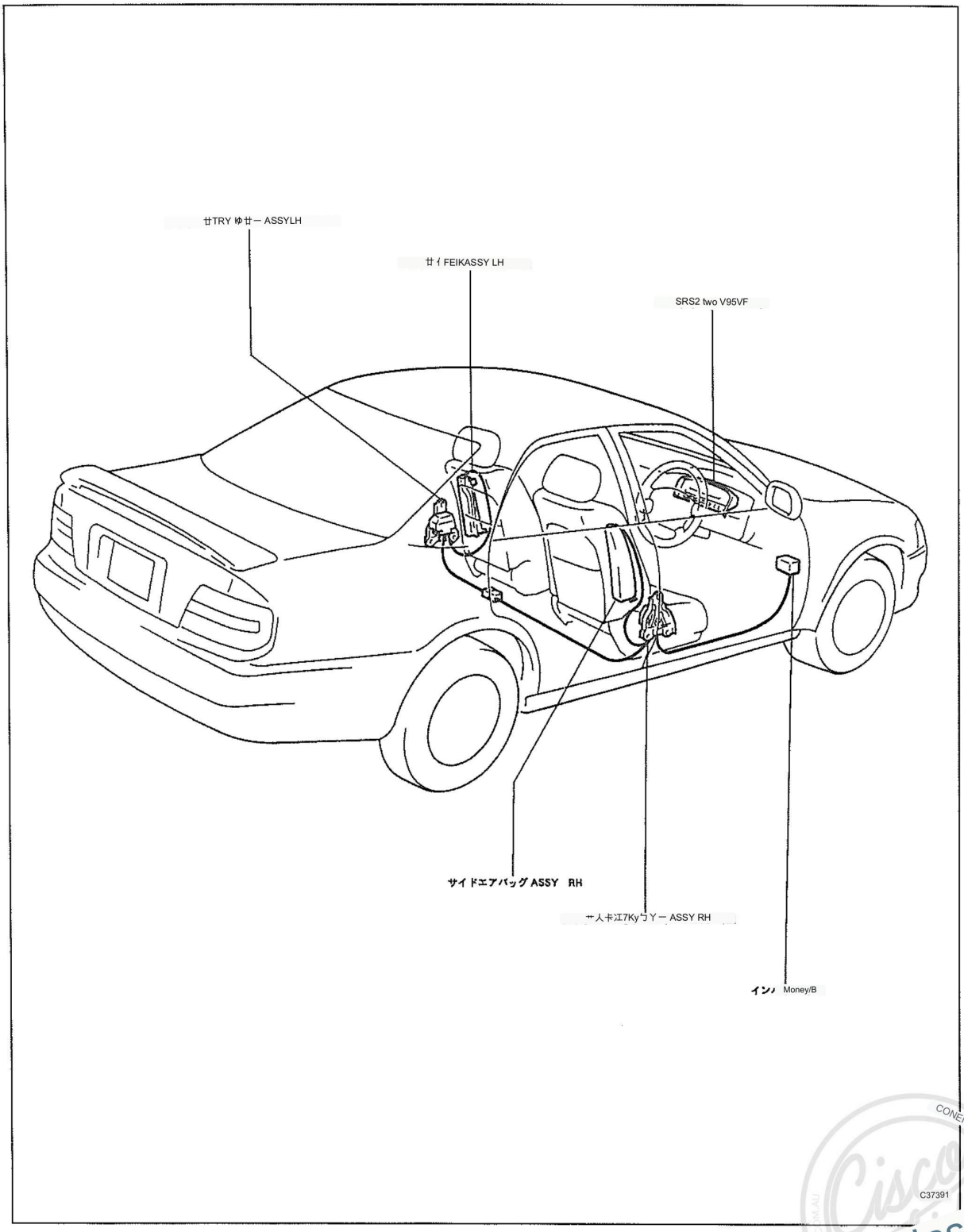
Parts layout diagram



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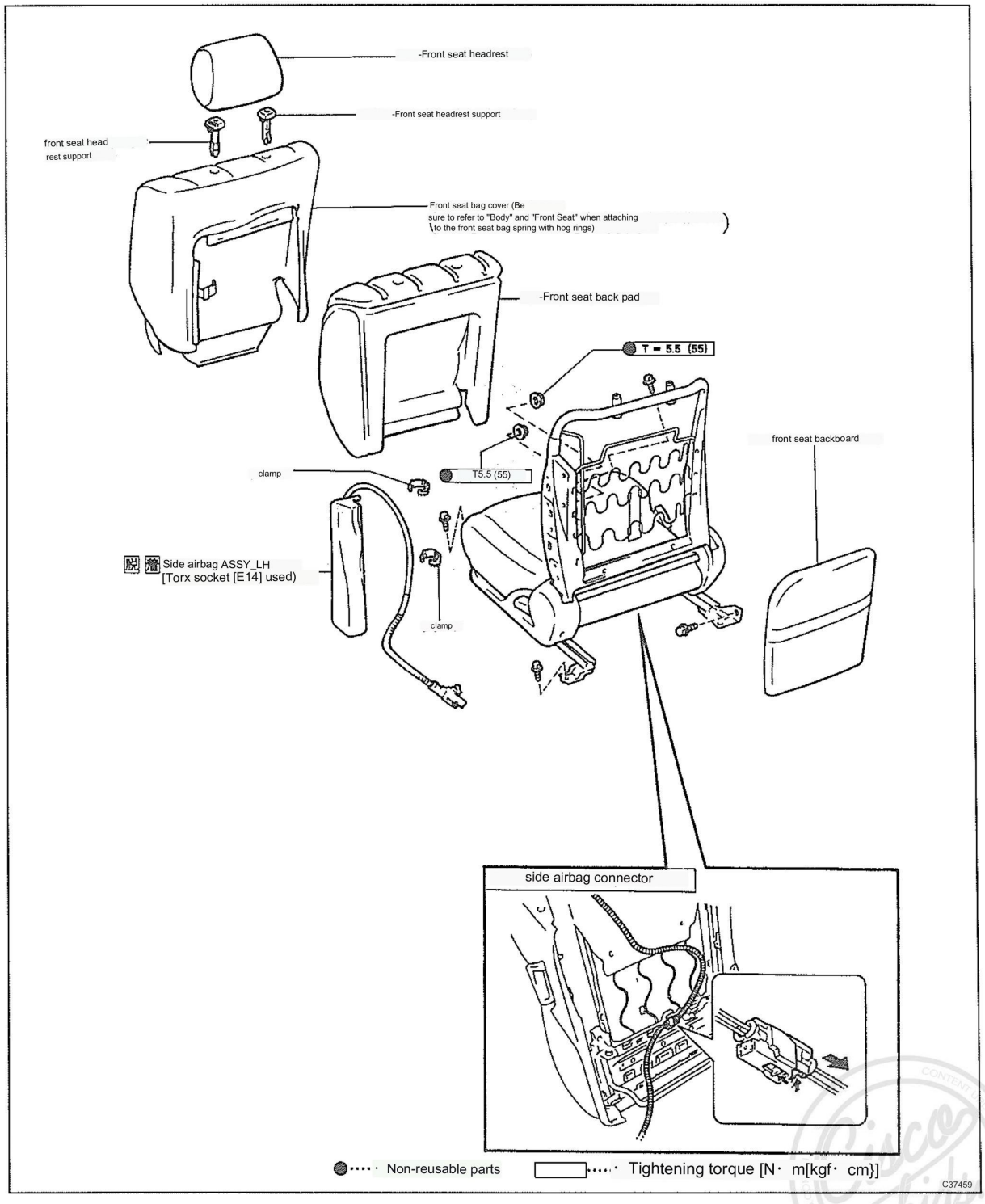
T0048713

Side airbag ASSY

注意 When removing the side airbag ASSY, carefully read the "Precautions".

Detachment configuration diagram



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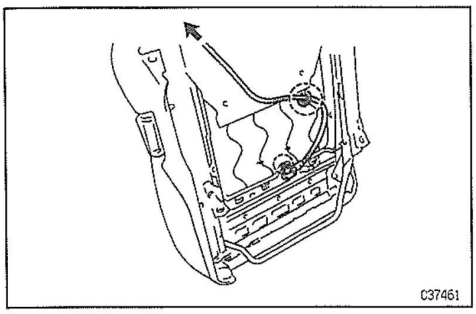
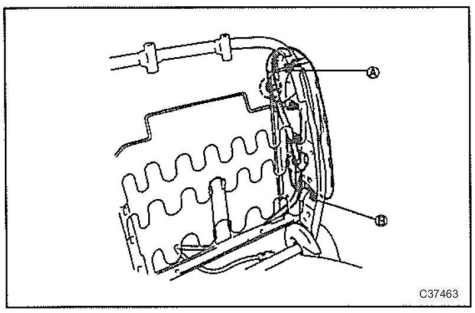


Points to note when removing the side airbag ASSY

1 Removing the side airbag wire harness

(1) Remove the clamp and tab, and then remove the seat adjuster. Remove the side airbag wiring harness. (2) Pull out the wire harness from under the seat. Note: When pulling out the wire harness, do not pull it more than necessary.

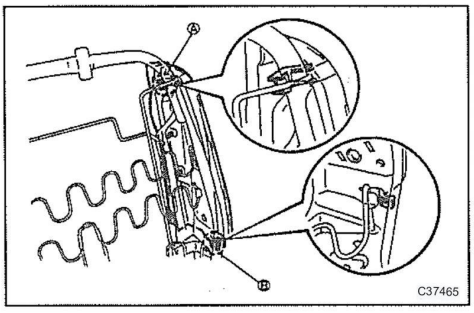


2 Side airbag ASSY removal

(1) Remove the two clamps and remove the front seat back spring. Remove the side airbag wiring harness. (2) Using the Torx socket (E14), remove the two Torx nuts. (3) Person in the figure, remove part 1 from the front seat pack spring. and remove the side airbag ASSY.

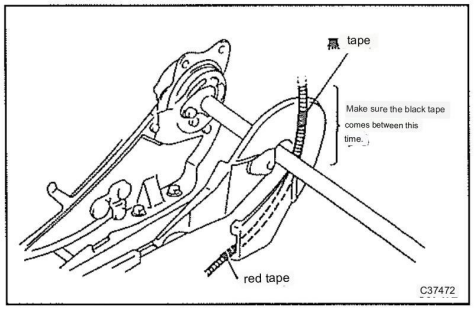
3 Side airbag ASSY external inspection

(Refer to "Precautions" - "Handling Precautions")



Points to note when installing side airbag ASSY

注意 - Securely hook parts A and ⑧ of the side airbag ASSY onto the front seat back spring.



- When clamping the side airbag wire harness under the seat cushion, make sure that the black tape and red tape of the wire harness are in the position shown in the illustration.

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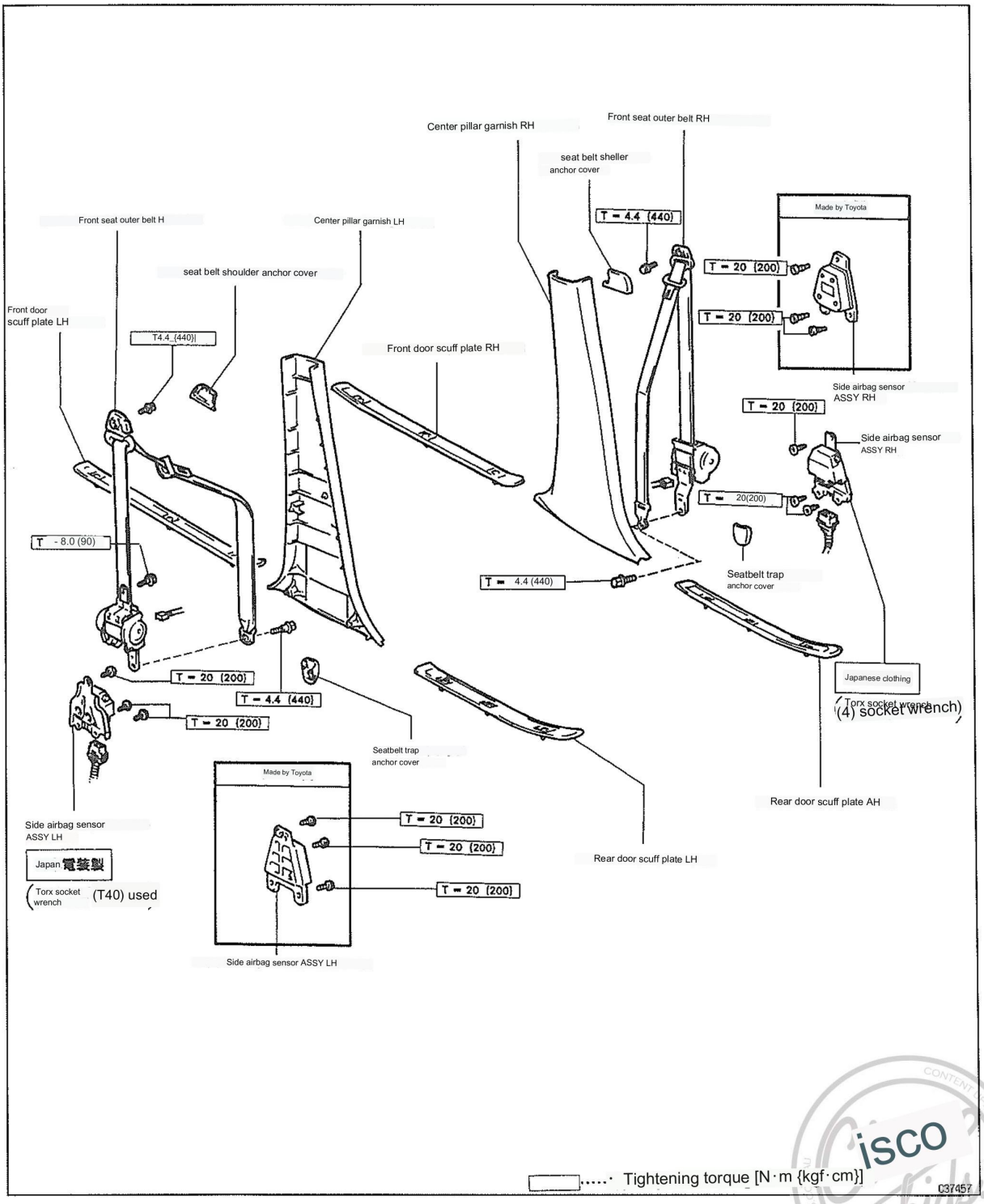
T0048714

Side airbag sensor ASSY

Note When removing the side airbag ASSY, be sure to follow the "Precautions".

Please check carefully.

Detachment configuration diagram



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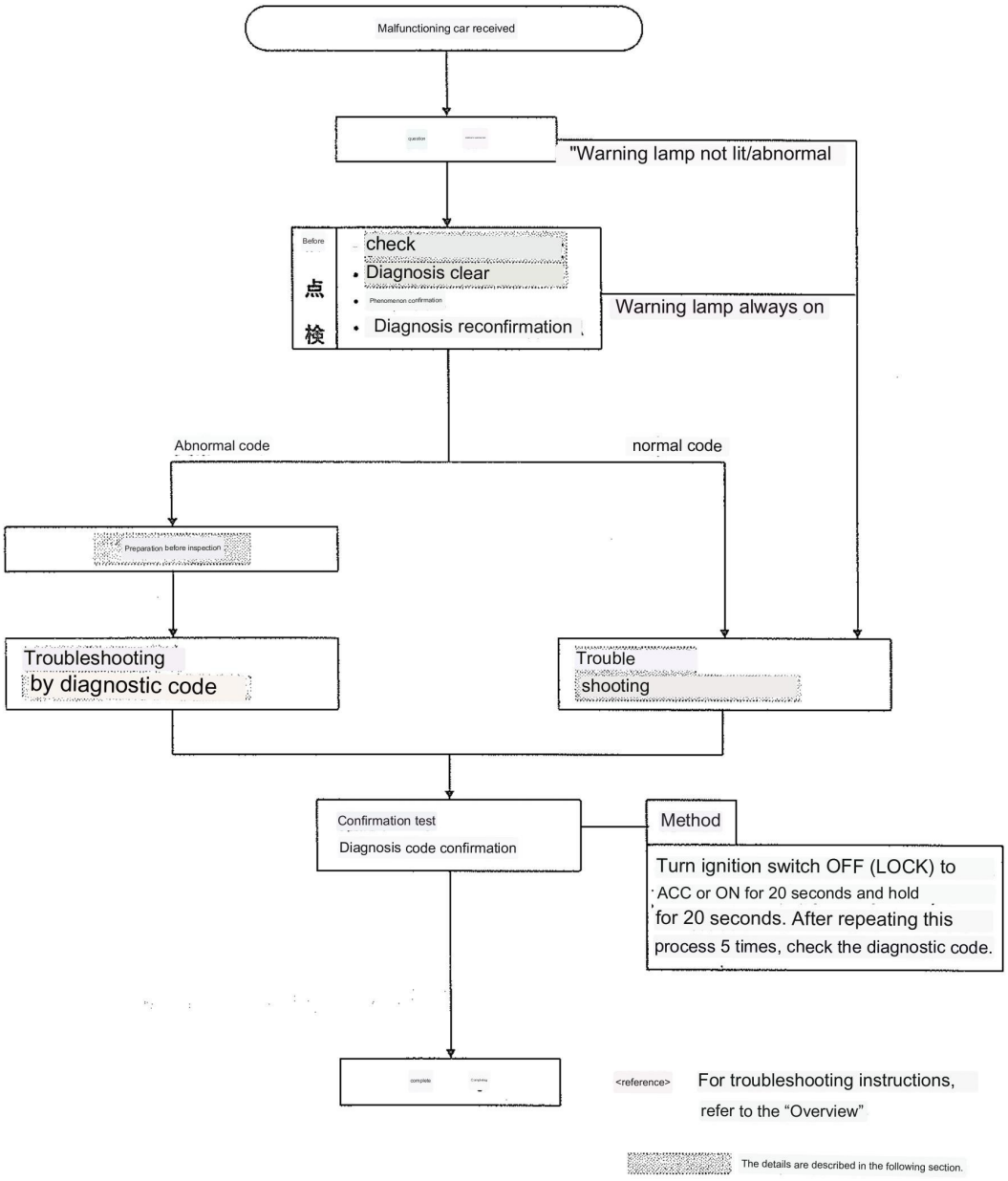
Troubleshooting How

to proceed with troubleshooting



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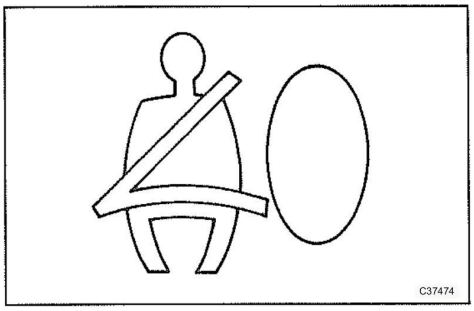
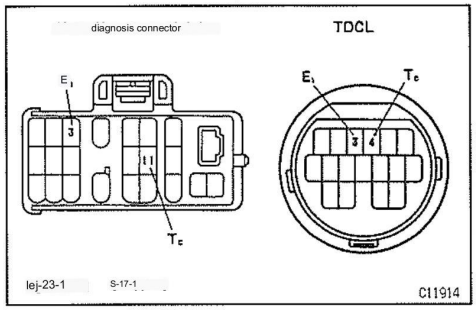
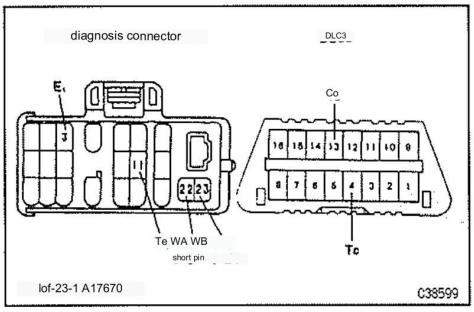






Diagnosis check

Warning lamp check

・ IG switch ACC (ON)

• Confirm that the check warning lamp lights up for about 6 seconds and then turns off.

〈参考〉 ・ If the light remains lit when the IG switch is set to ACC or ON, a malfunction has occurred in the airbag system.・ If the light occasionally lights up after about 6 seconds or if it lights up even when the IG switch is OFF (LOCK), there may be a short circuit in the warning lamp system.

Diagnosis code reading

Reading by warning lamp

(1) IG switch ACC (ON)

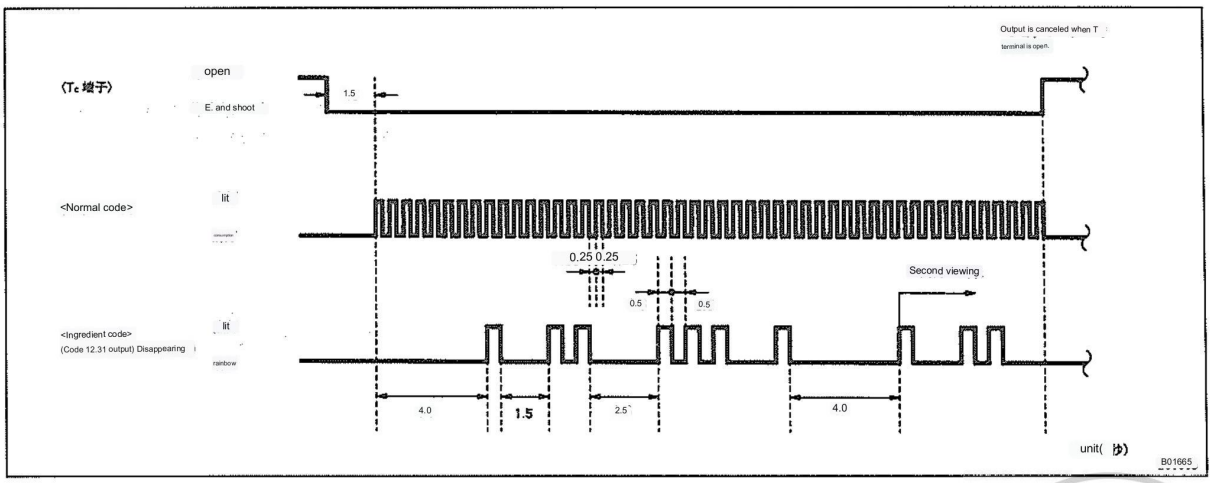
・ Turn the IG switch to ACC or ON and wait for 20 seconds. (2) TcE, between terminals (excluding 1JZ-GE, 1G-FE)

*Using the diagnosis check wire, diagnosis short between the “To E” terminals of the connector or TDCL. (3) Between TcE terminals, TC. Short circuit between terminals (1JZ-GE, 1G-FE)

・ Use a diagnosis check wire to short between the TcE terminals of the diagnosis connector or the TC terminals of the DLC3.

(4) Warning lamp reading

・ Read the number of flashes of the warning lamp.



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Reading by Toyota Diagnosis Reader

(Vehicles equipped with TDCL)

(1) Diagnosis code reading

- Using Toyota Diagnosis Reader, Diagnosis

Read the code.

•Engine system code

2JZ-GE·····818 1JZ-GTE.•••••820 2L-TE·····2F0

Diagnosis code erase

(1) IG switch OFF (LOCK) (2)

Lead wire connection

· Connect the lead wires to the Tc and AB terminals of the TDCL or diagnosis connector.

(3) IG switch ACC (ON)

- Turn the ignition switch to ACC or ON and wait for about 6 seconds.

do. (4)

Tc, AB terminal body ground

· Start from the Tc terminal side, then alternate between T, and AB terminals at 1 second intervals.

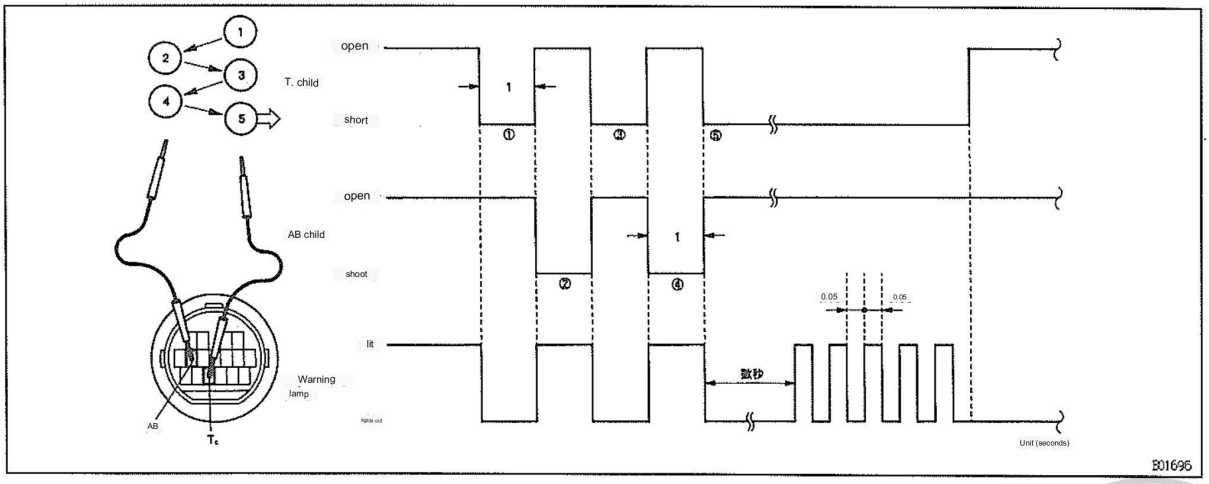
Ground the body.

(5) Warning lamp check

· Warning lamp lights up briefly (erasure completion code)

Check.

<Reference> · T. When grounding terminals and AB terminals alternately, one ground At the same time as releasing it, ground the other side. - If the erase completion code is not output, try again.



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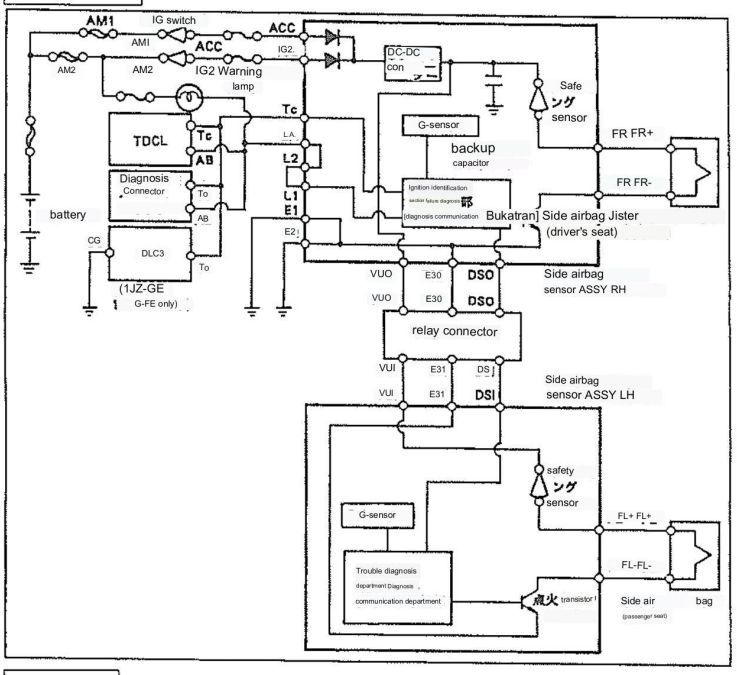
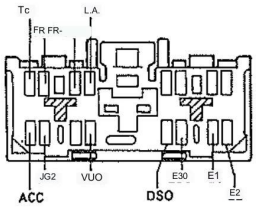
road map

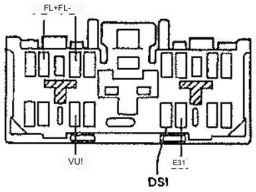
Made by Nippon Densei



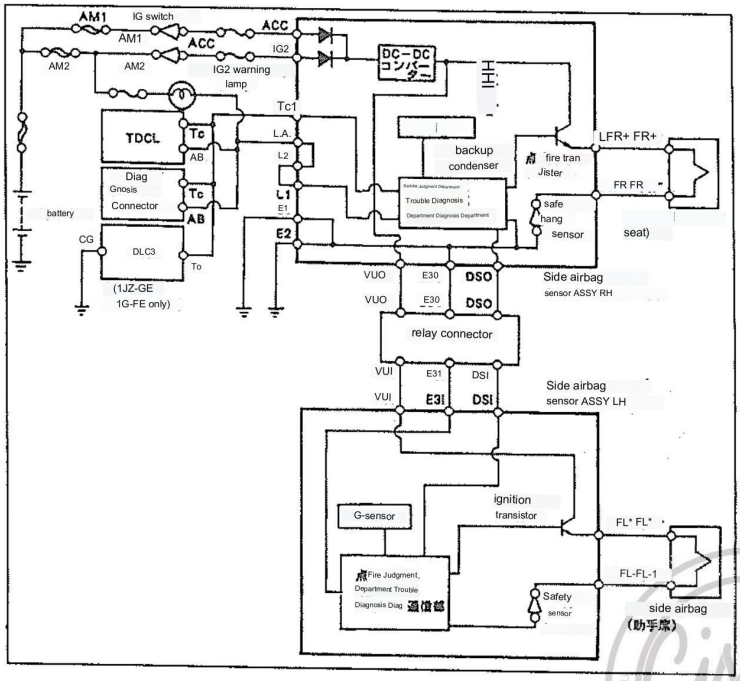
Side airbag sensor ASSY RH



Side airbag sensor ASSY LH

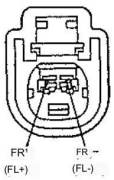


Made by Toyota

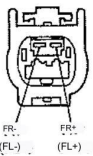


Side airbag

(side airbag sensor side)



(side airbag)



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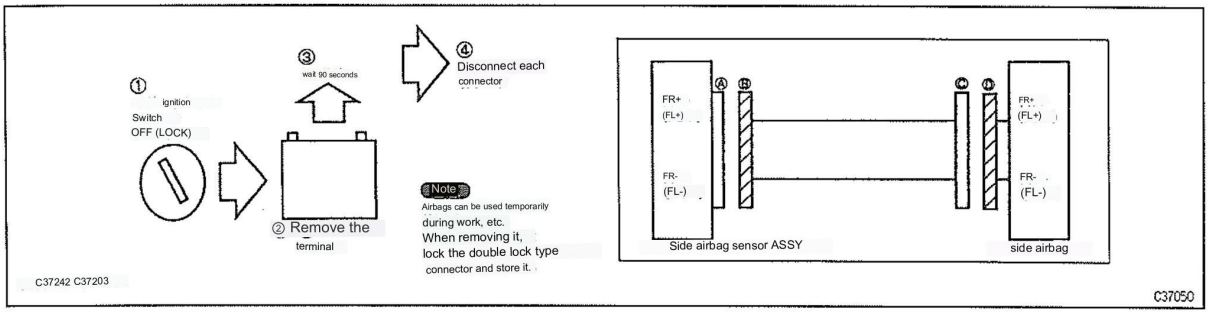
Preparation before inspection

When proceeding through the flowchart, first perform the following pre-inspection

Caution preparations when troubleshooting, short circuits, voltage and resistance

When measuring, measure from the W/H side of the connector.



Diagnosis code and problem phenomenon list

Note After understanding the problem, perform inspection according to the relevant flowchart.

1 How to read the flowchart

- ⬭ ····· Items to work on
- ▭ ····· Items to check
- ⬭ ····· Failure factor

item	diagnosis cis code R.H.	diagnosis cis code LH	diagnosis 内 capacity	備 考	Applicable flow chart
Troubleshooting by diagnosis code	11	71	Side airbag sensor ASSY ~ side airbag W/H is shorted to ground.· airbag sensor Side airbag sensor inside ASSY The server is always on.	——	1
	12	72	• Side airbag sensor ASSY ~ side airbag W/H が There is a short circuit to the power supply.	——	2
	13	73	• The ignition device is shorted in the side airbag. · Side airbag sensor ASSY ~Side airbag question W/H is short-circuited.	——	3
	14	74	· The ignition device is disconnected inside the side airbag. • The W/H between the side airbag sensor ASSY and the side airbag is disconnected.	——	4
	31	——	• There is a malfunction inside the side airbag sensor ASSY (RH side).· Power communication W/H between left and right sensors is shorted to ground.·	——	5
	——	32	The side airbag sensor ASSY (LH side) is malfunctioning internally. Ru. • W/H between side airbag sensor ASSY (RH side) and side airbag sensor ASSY (LH side) is short-circuited or disconnected.	——	6

item	Mismatch 異 象	Inspection area	Applicable flow chart
Ting 異 ラベ	· The warning lamp lights up, but the diagnosis code is displayed normally.	Power supply voltage system	7
Kev - The warning lamp is always on when the IG switch is OFF.		Warning lamp system	8
le 象	The warning lamp does not light even if the ignition switch is turned to ACC or ON.		9
ュ	· Diagnosis code is not displayed.· Diagnosis code is always output.	TDCL Tc terminal system	10

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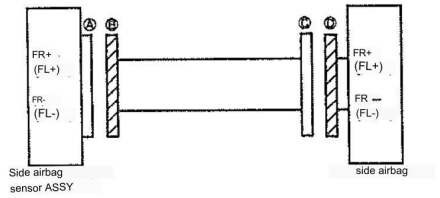
Troubleshooting by diagnostic code

1	Diag 11,71	Ignition circuit (earth short circuit)

[Explanation
・ The ignition circuit consists of an airbag sensor assembly and an airbag. This circuit outputs an ignition (deployment) signal when the deployment conditions are met, causing the airbag to deploy.
・ When code "11" or "71" is stored, if the fault cannot be determined even after inspection according to the flowchart below,
Replace all bag-related parts (including wire harness).

関係図



斜線 Connector with short mechanism

Problem details ...

① FR+ ~ FR- (FL+ ~ FL-) terminals are shorted to ground.
② Internal failure of side airbag
③ Side airbag sensor ASSY internal failure
[Side airbag sensor circuit is always ON. FR+ internally, FR (FL+,FL-) is shorted to ground. code 11
(71) Failure of the circuit that detects

Preparation before inspection (see "Preparation before inspection")

Resistance value check

FR of connector C, FR - between terminal and body ground
Check resistance value
Standard value 1MΩ or more

NO. → Side airbag sensor ASSY ~ Side airbag connector between cables, W/H repair or replacement

YES

Connect connector A and connector B of the side airbag sensor ASSY.

FR+ (FL+)~FR (FL-) end of connector C
short circuit between children

14

Connect the battery terminals, turn the ignition switch to ACC or ON, and wait 20 seconds.

"Side airbag sensor ASSY internal failure [(i, FL-) FR+, FR- is grounded and short confirmed"

After clearing the diagnosis code, diagnosis code NO
Check the
code Criteria Diagnosis code 11 (71) is not output.
Ikoto
Note At this time, a code other than diagnosis code 11 (71) is output, but it can be ignored.

[Code 11(71) output] → Side airbag sensor ASSY replacement

YES

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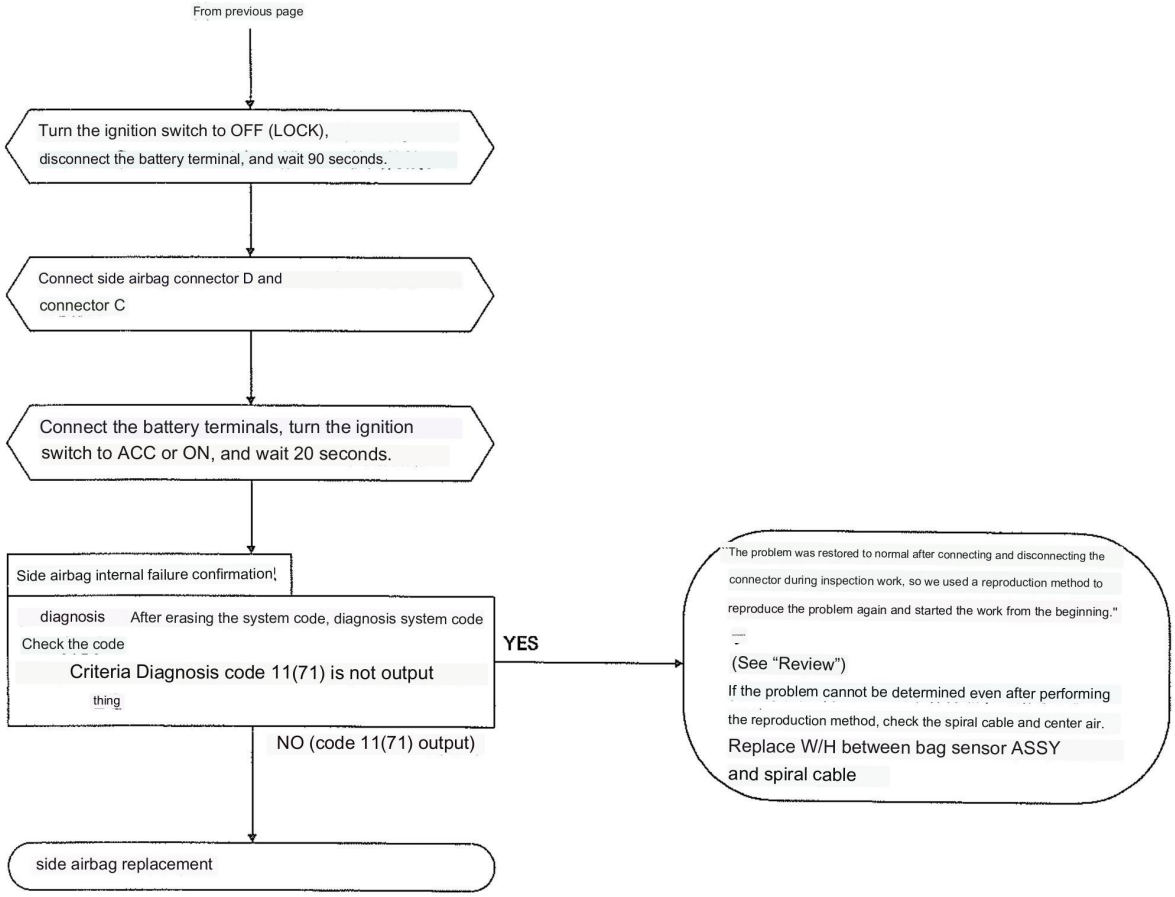

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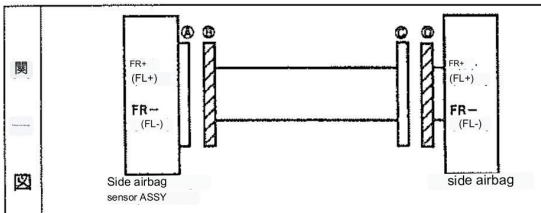
2	Diag 12,72	Ignition circuit (shorted to +B)

Explanation

The ignition circuit consists of the side airbag sensor ASSY and airbag. This circuit outputs an ignition (deployment) signal when the deployment conditions are met, causing the airbag to deploy.



Problem details

① FR+ ~ FR (FL+ ~FL-) terminals are shorted to +B
② Side airbag internal failure
③ Side airbag sensor ASSY internal failure
[FR+, FR" (FL+,FL-) is shorted to +B internally.
Failure of the circuit that detects code 12(72)]

Preparation before inspection (see "Preparation before inspection")

Connect the battery terminals and turn on the ignition switch.

Side airbag voltage check

Check the voltage between FR+, FR (FL+, FL-) terminal of side airbag connector C and body ground.
Reference value OV

NO. → Side airbag sensor ASSY~ Connector between side airbags, W/H Repair or replacement

YES

Side airbag sensor ASSY connector
Connect (A,B)

Short-circuit between FR+ (FL+)~FR (FL-) terminals of connector C.

14

Connect the battery terminals, turn the ignition switch to ACC or ON, and wait 20 seconds.

Side airbag sensor ASSY internal failure FR+, FR- *L(FL+, FL-) shorted to +B Check After clearing the diagnosis code, check the diagnosis code
Check the code Criteria Diagnosis code 12 (72) is not output
At this time, a code other than diagnosis code 12 (72) is output, but you can ignore it.

NO
[Code 12(72) output] → Side airbag sensor ASSY replacement

YES

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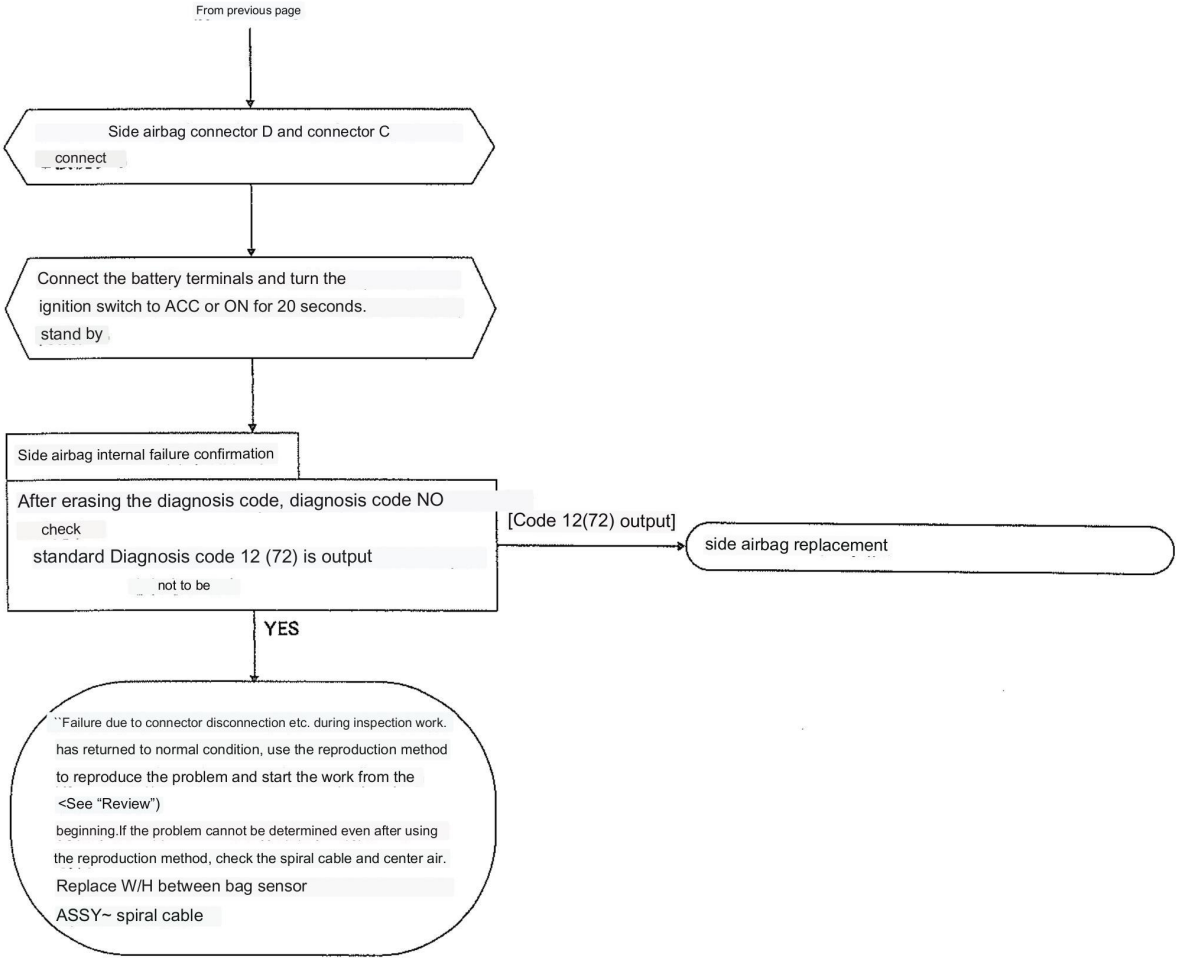

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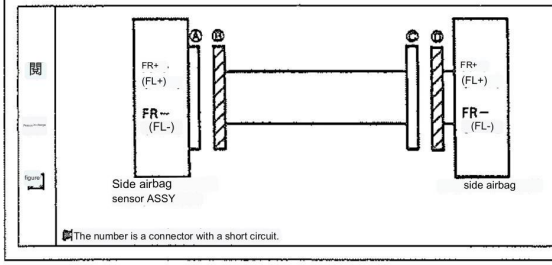
3	Diag 13,73	Ignition circuit [FR+ ~FR- (FL+ · FL-) ～short circuit between terminals]

Explanation

The ignition circuit consists of a side airbag sensor assembly and an airbag. This circuit ignites (deploys) when the deployment condition is met. Outputs a signal and deploys the airbag.



Condition details

① FR+FR- (FL+ ~FL-) terminals are short-circuited
② Side airbag internal failure ③
Side airbag sensor ASSY internal failure [FR+ and FR- (FL+ and FL-) are short-circuited internally. There is.
Failure of the circuit that detects code 13 (73)]

Preparation before inspection (see "Preparation before inspection")

Release the short mechanism of connector B

Connector B~Connector C Check resistance value

Place a tester rod on the FR FR (FL+, FL-) terminals of connector C, and check the resistance value between the FR+ and ～FR- (FL+~FL~) terminals between connector B~ connector C.

Standard value 1MΩ or more

NO. → Repair or replace side airbag sensor ASSY ~ side airbag connector, W/H

YES

Connect connector A and connector B of the side airbag sensor ASSY.

Connect the battery terminals, turn the ignition switch to ACC or ON, and wait 20 seconds.

Side airbag sensor ASSY internal failure (FR+ and FR- FL FL-) 確認

Short After erasing the diagnosis code, diagnosis code Check the code Criteria Diagnosis code 13 (73) is not output.

Note:

At this time, a code other than diagnosis code 13 (73) is output, but you can ignore it.

NO
[Code 13(73) output] → Side airbag sensor ASSY replacement

YES

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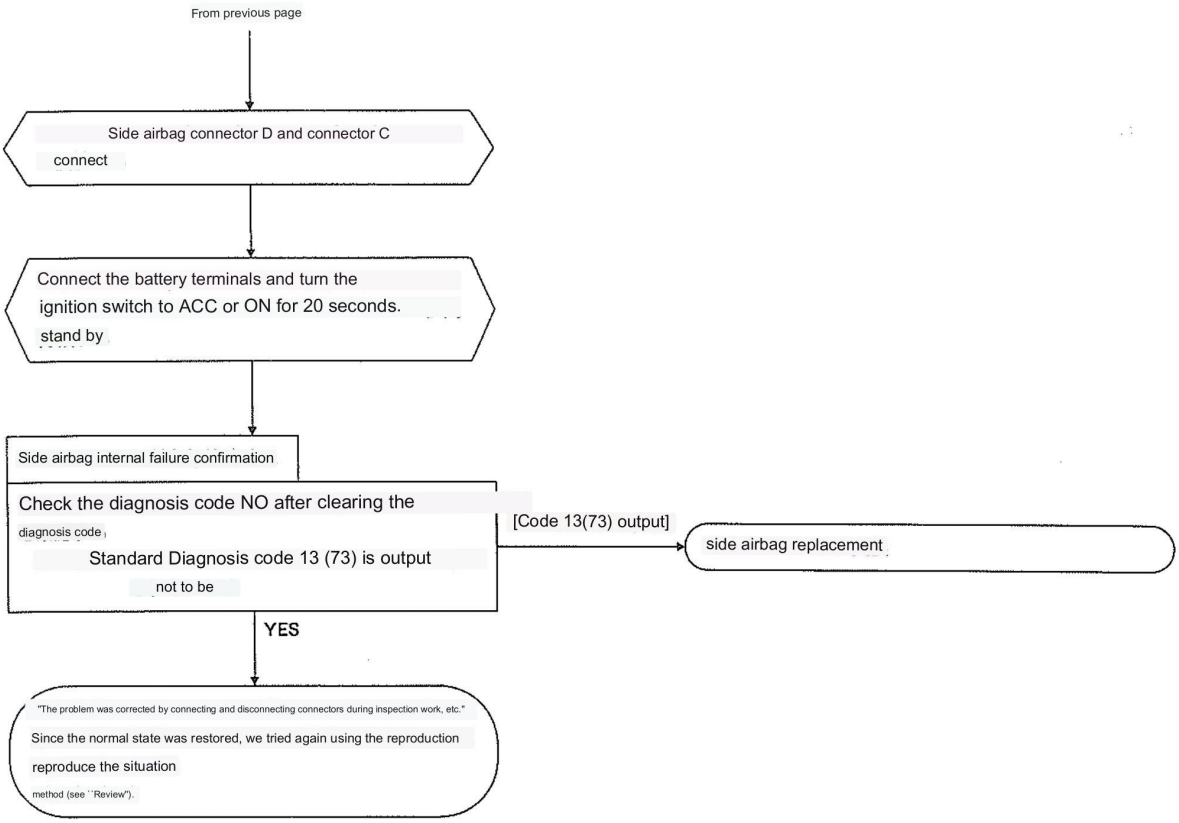

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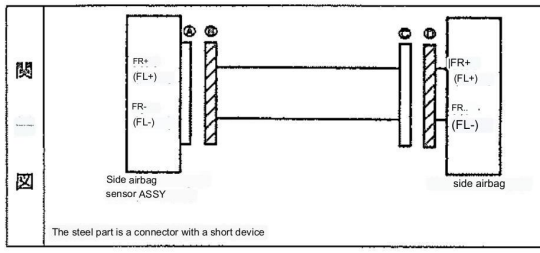
4	Diag 14,74	Ignition circuit [FR+ ~ FR- (FL+ ~ FL-) disconnection between terminals]

Explanation

The ignition circuit consists of the side airbag sensor ASSY and the airbag. This circuit ignites when the deployment condition is met. (deployment)
Outputs a signal and deploys the airbag.



Condition details
No ① FR FR (FL+ ~ FL-) terminals are disconnected
② Side airbag internal failure
③ Side airbag sensor ASSY internal failure [FR+ and FR (FL+ and FL-) are disconnected internally. Failure of the circuit that detects code 14 (74)]

Preparation before inspection (see "Preparation before inspection")

Release the short mechanism of connector B

Check the resistance value between connector B and connector C

Place the tester rod between the FR+ (FL+) terminal of connector B and the FR+ (FL+) terminal of connector C, or between the FR (FL-) terminal of connector B and the FR- (FL-) terminal of connector C, Check the resistance value between connectors B and C.
Standard value: 1Ω or less

NO. → Repair or replace side airbag sensor ASSY ~ side airbag connector, W/H

YES

Connect connector A and connector B of the side airbag sensor ASSY

Connect the battery terminals, turn the ignition switch to ACC or ON, and wait 20 seconds.

Side airbag sensor ASSY internal failure (FL+ FL- "FR+ and FR-

After erasing the diagnosis code, diagnosis code
Check the code
Criteria Diagnosis code 14 (74) is not output.
Ikoto

NO. [Code 14 (74) output] → Side airbag sensor ASSY replacement

YES

Connect side airbag connector D and connector C

Connect the battery terminals, turn the ignition switch to ACC or ON, and wait 20 seconds.

Side airbag sensor internal failure confirmation

After clearing the diagnosis code, check the diagnosis code
Criteria Diagnosis code 14 (74) should not be output.

NO. (Code 14(74) output) → side airbag replacement

YES → The problem was restored to normal after connecting and disconnecting the connector during inspection work, so we used the reproduction method to reproduce the problem again. (See "Review")

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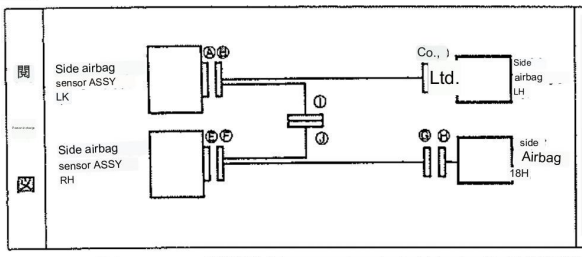
5	code 31	Center airbag sensor ASSY internal failure

explanation

The side airbag sensor ASSY consists of a safing sensor, a safety transistor, an ignition transistor, a diagnosis circuit, etc.



① Center airbag sensor ASSY internal failure
② Center airbag sensor ASSY RH ~ LH W/H (power supply) is shorted to ground.

Turn the ignition switch OFF (LOCK) for 15 seconds (1)

Turn the ignition switch to ACC or ON and wait 20 seconds (2)

Repeat (1) and (2) 4 times

Short-circuit the Tc-E terminals of TDCL and perform diagnosis. Check the code

Standard diagnosis code 31 is not output.

NO

YES

During inspection work, the problem returned to normal, so we used the reproduction method to reproduce the problem again. (See "Review")

Side airbag sensor ASSY (RH and LH) disconnect the connectors (A,B and E,F)

Side airbag sensor ASSY RH ~ LH short circuit inspection

Check that W/H between VUI terminal of connector B and VUO terminal of connector F is not shorted to body ground.

YES

NO.

Wire harness (between B and F) Repair or replace connectors B and F

Connect connector E and connector F of the side airbag sensor ASSY (RH side).

Check voltage between connector B and body ground

Check the voltage between connector B's VUI terminal and body ground. Standard value 14V or more

NO

YES

Side airbag sensor ASSY (RH side) replacement

Connect connector A and connector B of side airbag sensor ASSY (LH side)

Check the voltage between connector B~pode earth, connector F~body earth

Check the voltage between connector B's VUI terminal and body ground, and connector F's VUO terminal and body ground. Standard value: 14V or more

NO.

Side airbag sensor ASSY (LH side) replacement

YES

Side airbag sensor ASSY (RH side) replacement

14

[salutation]
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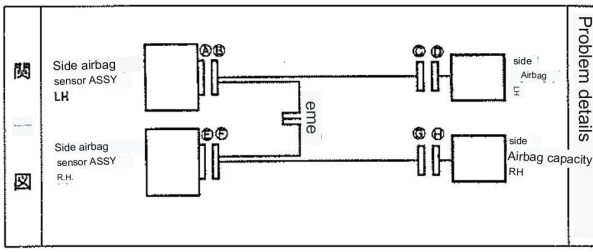
6	code 32	Side airbag sensor ASSY internal failure

explanation

The side airbag sensor assembly consists of a safing sensor, a safety transistor, an ignition transistor, a diagnosis circuit, etc.



Problem details

No ① Side airbag sensor ASSY (LH side) connector are not fully mated.

② Side airbag sensor ASSY (RH and LH side) Internal failure

③ Side airbag sensor ASSY (RH side)~Side air W/H short circuit or disconnection between bag sensor ASSY (LH side) are doing.

Disconnect the side airbag sensor (RH and LH) connectors

Side airbag sensor ASSY (LH) connector inspection

Check if the half-fitting detection pin of connector B of side airbag sensor ASSY (LH) is normal and conductive.

NO → Repair or replace side airbag sensor ASSY (LH) connector B

YES

Side airbag sensor ASSY (RH) connection
Connect connector E and connector F

Connect the battery terminals, turn the ignition switch to ACC or ON, and wait 20 seconds.

Short-circuit the FR, FR of connector G and the FL+, FL- terminals of connector C.

Connector B~H voltage check

Check the voltage between the VUI terminal of connector B and body ground.

Approved Standard value 10V or more

NO. → Turn the ignition switch OFF (LOCK)

YES

to the next page

Turn the ignition switch OFF (LOCK)

Disconnect connectors I and J, ignition switch to ACC or ON

Check voltage between connectors F~J

Check the voltage between the VUO terminal of the connector and body ground.

confirm Reference value 10V or more

NO. → Wire harness (between B and 1), repair or replace connectors B and 1

YES

Side airbag sensor ASSY RH internal inspection

Check the voltage between VUO terminal of connector E and body ground.

Check Reference value 10V or more

NO. → Wire harness (between F and J), repair or replacement of connectors F and

YES

Side airbag sensor ASSY (RH) replacement

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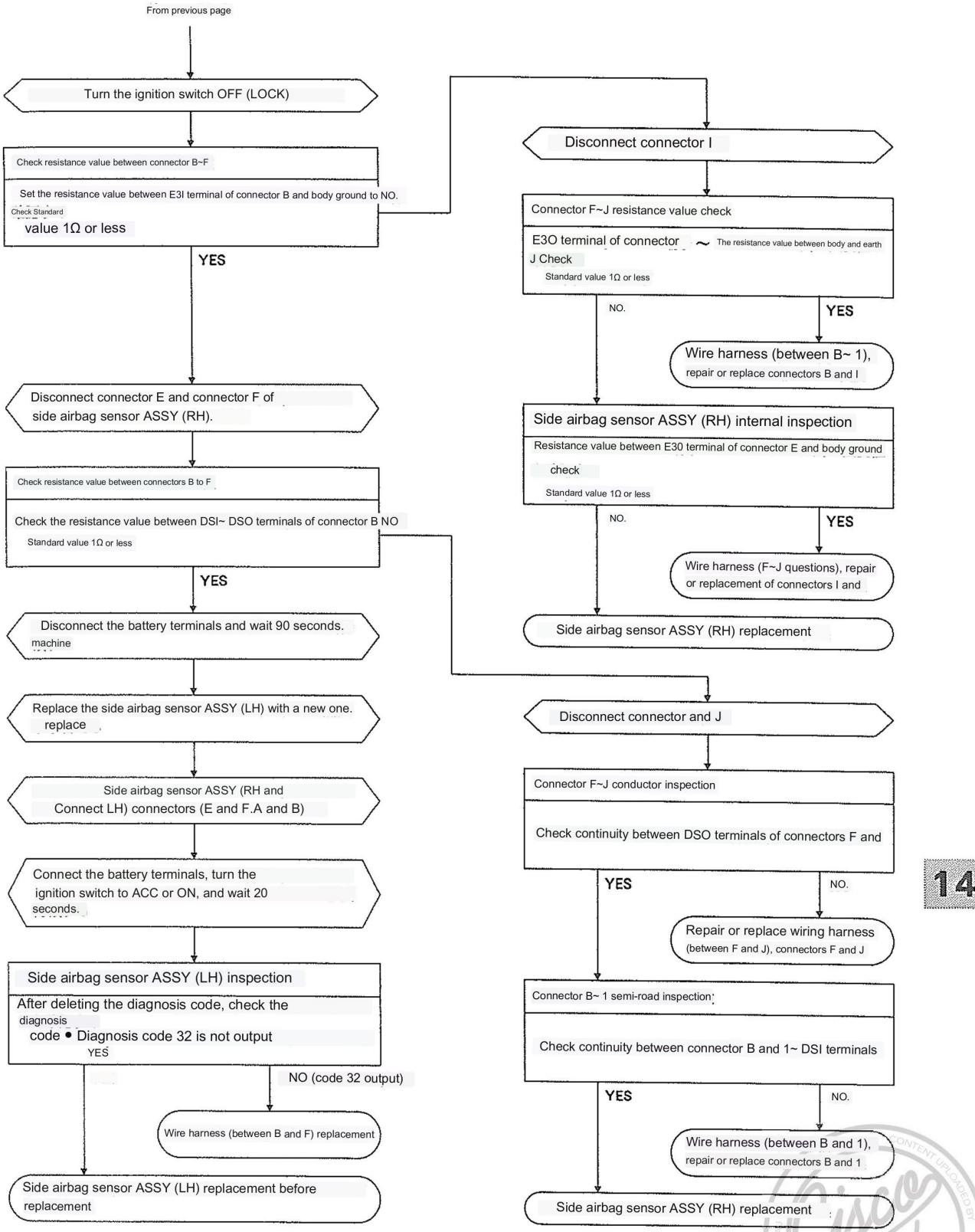

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Troubleshooting by problem phenomenon

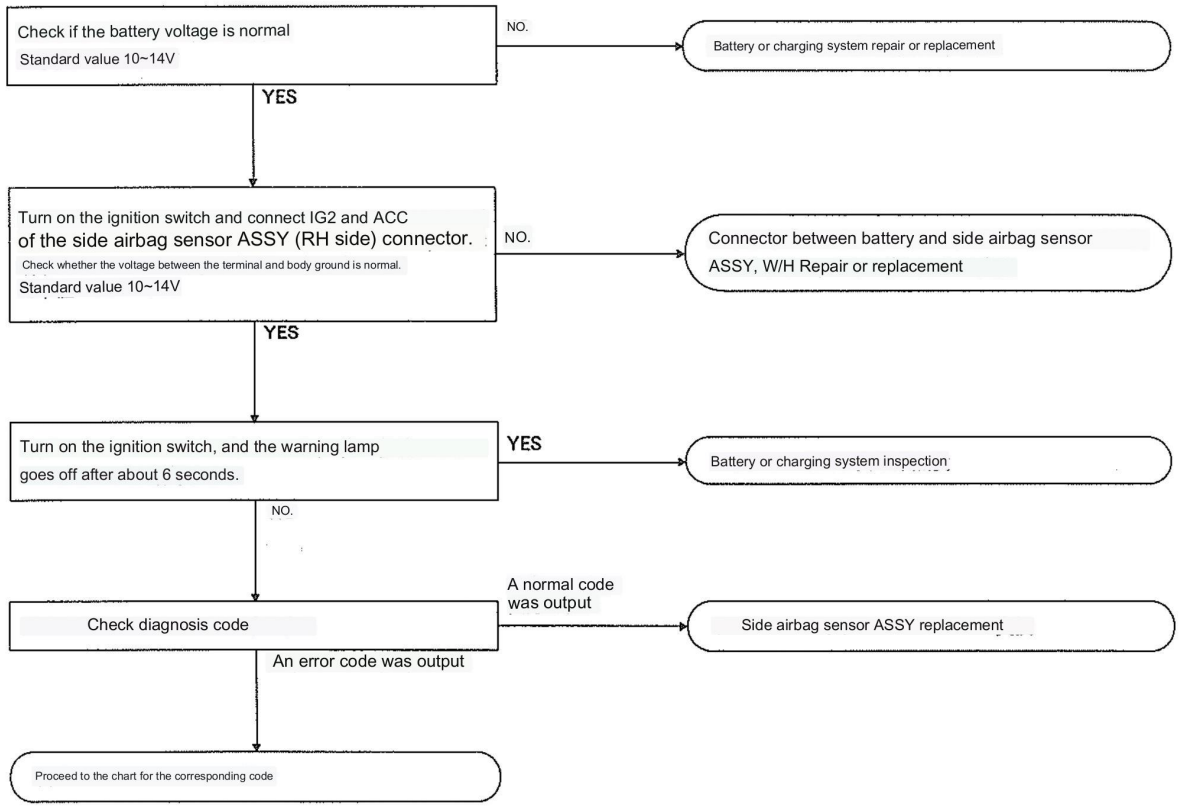
7	Power supply system

explanation

- The airbag system is equipped with a boost circuit (DC-DC converter) inside the side airbag sensor ASSY (RH side) to ensure reliable operation even when the battery voltage drops. (LH). In the unlikely event that the battery voltage drops for some reason, the side airbag sensor ASSY will turn on the warning lamp to warn you. After that, if the battery voltage returns to normal, the warning lamp will turn off after about 10 seconds. This problem
- differs from others in one point: ① When the problem is resolved, the warning lamp will turn off after about 10 seconds.

Problem details

diagnosis code	No condition 内 容
Warning lamp lights up and Normal code	① Decrease in vehicle battery voltage



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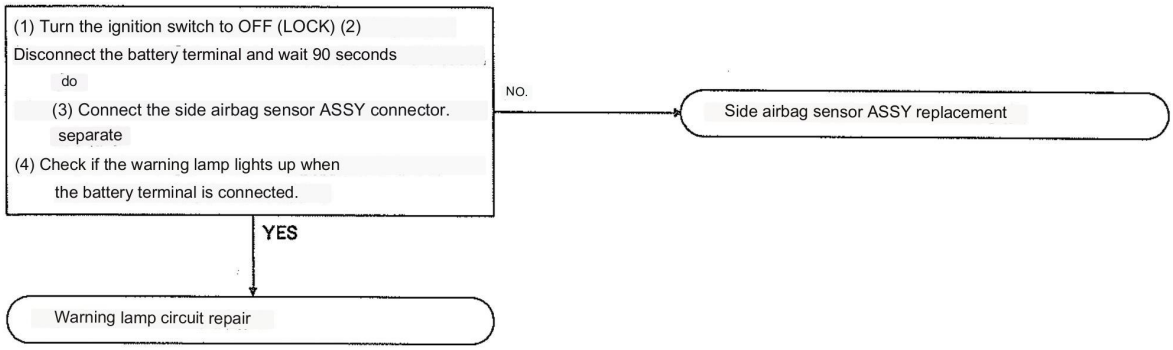
8	Warning lamp stays on when IG switch is OFF

explanation

· If the system is normal, the warning lamp lights up for about 6 seconds after turning the ignition switch to ACC or ON, and then Lights out.

- In the unlikely event that a system malfunction occurs, the warning lamp will continue to illuminate even after 6 seconds have passed to alert the driver.· Also, when the ignition switch is in the ACC or ON state and the Tc-E1 terminals of the TDCL are shorted, a diagnosis code will be displayed by flashing the warning lamp.



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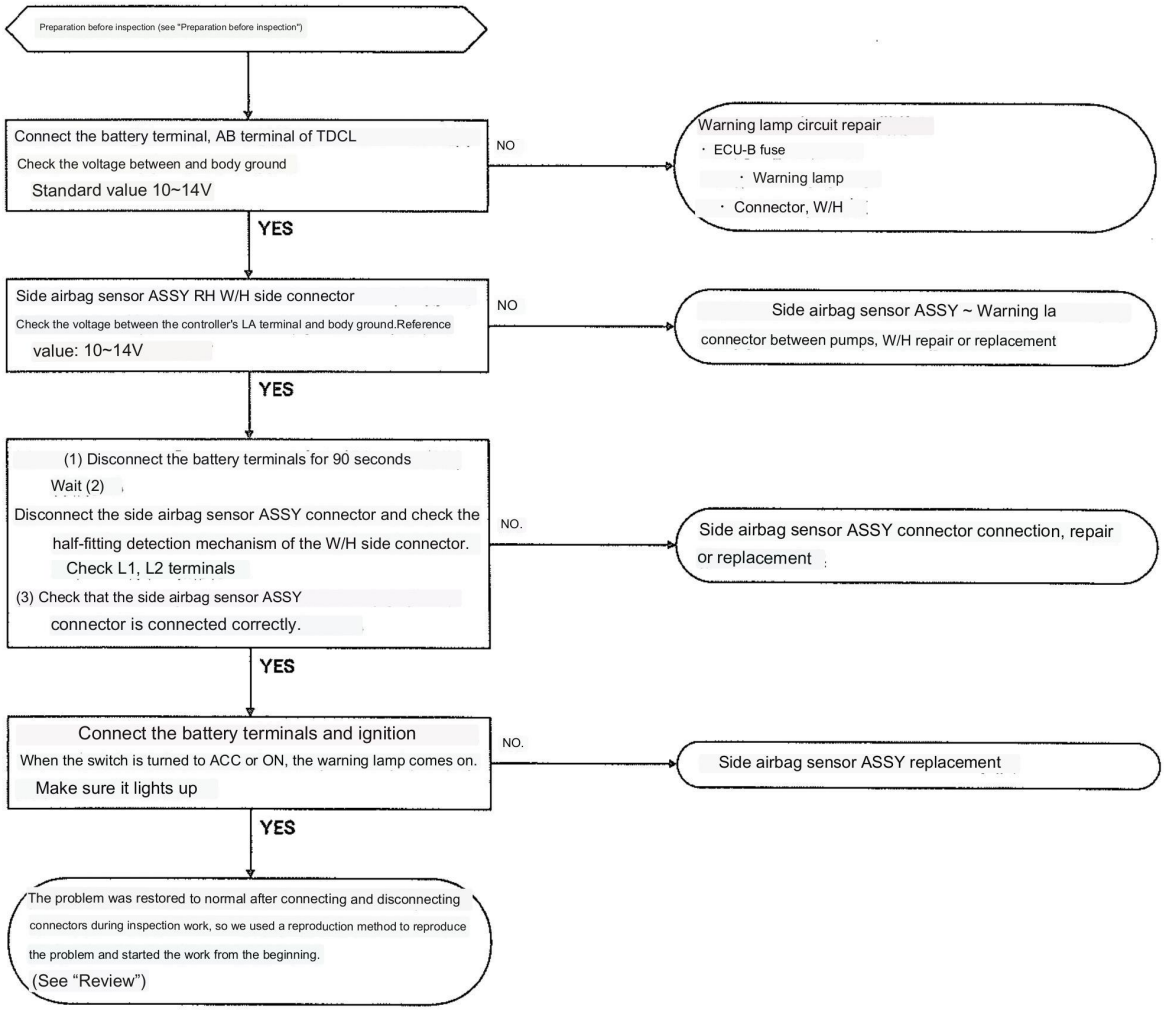
9	Warning lamp not lit

explanation

· If the system is normal, the warning lamp will illuminate for approximately 6 seconds after turning the ignition switch to ACC or ON, and then turn off.
- In the unlikely
event that a system malfunction occurs, the warning lamp will remain on to alert the driver even after 6 seconds have elapsed.



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10	Tc terminal circuit

Explanation

By shorting the Tc-E1 terminals of the TDCL, the side airbag sensor ASSY is set to diagnosis mode and outputs a diagnosis code, which is displayed by flashing the warning lamp.

Is the diagnosis code not displayed or is it always output?
Is it always output?

Do not show

Turn the ignition switch to ACC or ON, and check the voltage between the TcE terminals of TDCL.Reference voltage: 10~14V

YES

NO.

TDCL Tc terminal circuit inspection and repair

When the ignition switch is set to ACC or ON and the connector is connected to the side airbag sensor ASSY, a short circuit occurs between the connector Tc terminal of the side airbag sensor ASSY and the body ground.
Display sys code

YES

NO.

Side airbag sensor ASSY replacement

Inspection and repair of W/H Tc circuit between side airbag sensor ASSY ~ TDCL

Turn the ignition switch to OFF (LOCK), disconnect the battery terminal, and wait 90 seconds.

Remove the side airbag sensor ASSY connector.
Remove it and check the resistance value between the Tc terminal of the W/H connector of the side airbag sensor ASSY and the body ground.
基準値 ∞Ω

側

YES

NO.

Side airbag sensor ASSY ~ TDCL
W/H Tc circuit inspection and repair

Side airbag sensor ASSY replacement

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Individual inspection

Side airbag sensor ASSY

1 Side airbag sensor ASSY inspection

Inspection of the side airbag sensor ASSY is troubleshooting

Follow the instructions.

("troubleshooting"

- "Troubleshooting with flowcharts"

- See "Diagnostic Code 32")

Precautions when disposing of side airbags

Precautions when disposing of side airbags

1 Do it outdoors in a safe place.

2 When deploying the side airbag, use SST to deploy the side airbag.

Stay at least 5m away from the airbag.

3 The deployed side airbag is extremely hot and must be deployed

Leave it for the next 30 minutes.

4 Do not splash water on the deployed side airbag. 5

When handling a deployed side airbag, wear safety goggles and

and gloves.

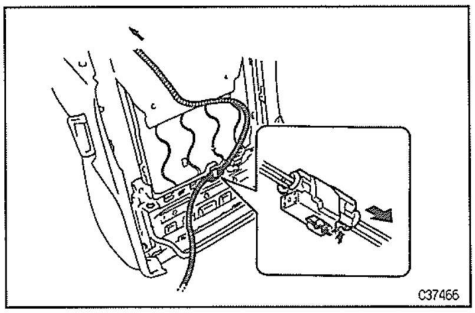
6 Place the deployed side airbag in a plastic bag, seal it, and dispose of it.

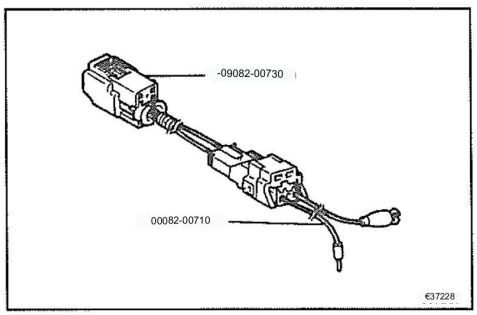
do.

7 Always wash your hands with water when you finish work.

8 Never discard the side airbag in an undeployed state.

9 When disposing of a side airbag that has already been deployed, carry out the work according to the procedure for "side airbag disposal."





Side airbag disposal

Deployment guidelines when disposing of a vehicle equipped with a side airbag system

1 Check precautions for handling work

(See "Precautions" and "Caution when handling")

2 Power disconnection

(See "Precautions" - "General Precautions")

3 Removing the front seat

(1) Remove the 4 seat rack covers and 4 bolts, and remove the front

Remove the sheet.

4 Disconnect the side airbag connector (1)

Disconnect the side airbag connector on the back of the seat.

5 Side airbag deployment

(1) Airbag deployment wire CONTENT

Attach the component wire sub-harness 1.

SST 09082-00710 09082-00730

(2) Short-circuit the SST alligator mouth and terminal.

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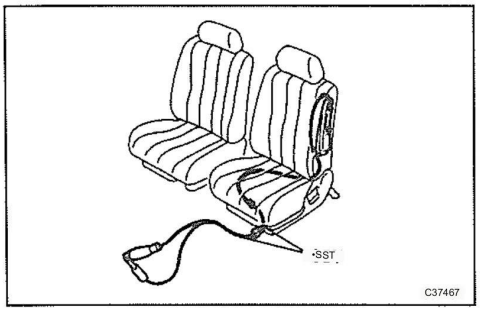
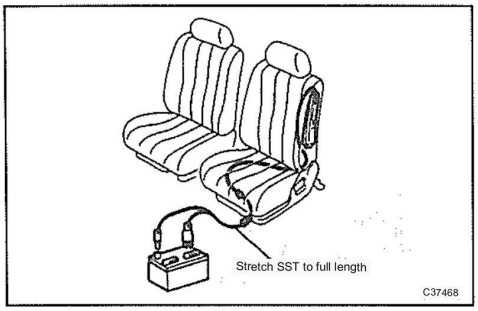
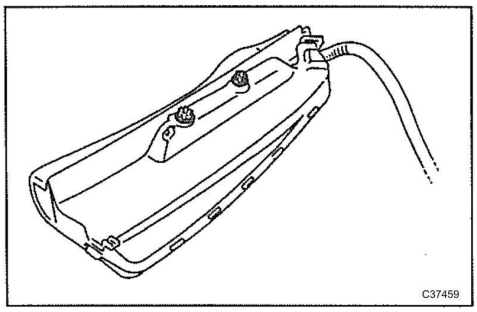






(3) Connect the SST connector and the airbag connector (yellow

(4) Attach the front seat with 4 bolts

(5) Place the battery in the position where the SST is fully extended from the vehicle.

Note - At this time, close all doors and windows.

· Confirm that there are no people in or around the room. (6) After confirming the safety of the inside of the vehicle and the surrounding area once again, Connect the port to the battery.

(7) Connect the SST terminal to the battery + and deploy the airbag. Be sure

Note to shout out a warning before deploying.

Deployment guidelines when disposing of side airbags individually

1 handling. Check work precautions

(Refer to "Precautions" - "Precautions for handling work")

2 Power disconnection

(See "Precautions" and "General Precautions")

3 Side airbag ASSY removal

(Refer to "Side airbag" - "Points to note when removing side airbag ASSY")

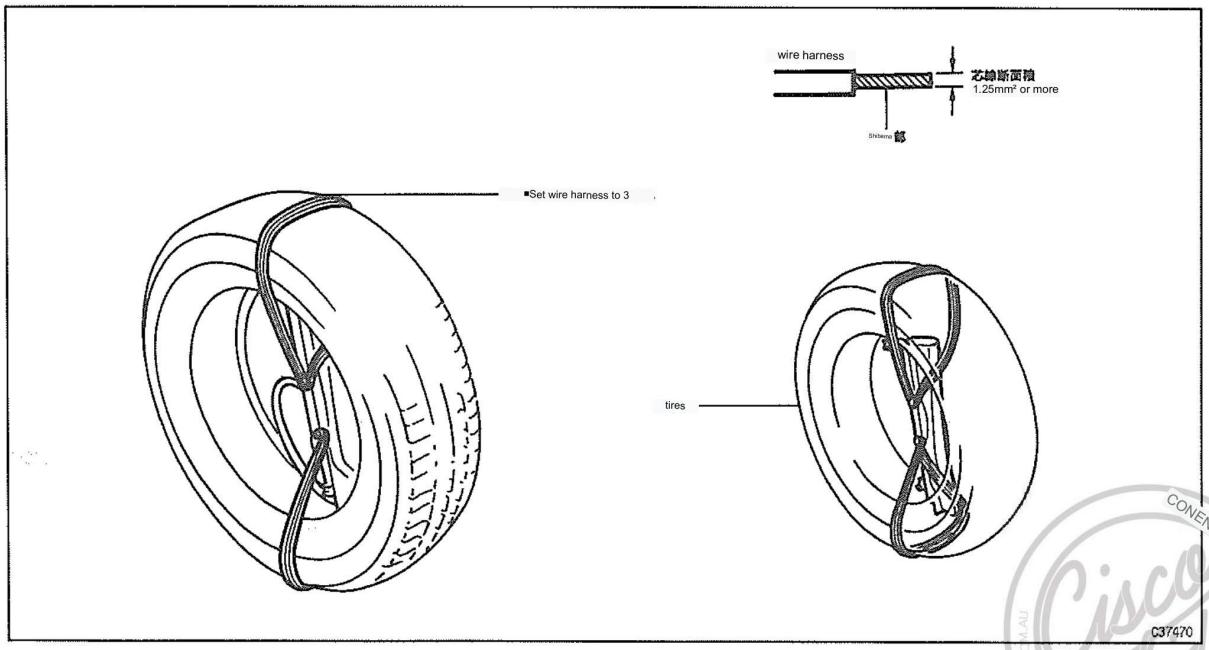
4 Side airbag ASSY fixation

(1) Install the two side airbag mounting nuts.

(2) Secure the side airbag ASSY to the ear using an automobile wire harness 夕 (core wire cross-sectional area of 1.25mm or more).

注意 Strictly observe the following instructions. If you do not follow the instructions, the unfolded side The airbag could fly and be extremely dangerous.

① When the bag is deployed, approximately 1 ton of force is applied to the wire harness, so set the wire harness to position 3 and secure it firmly. ② Make sure to install the airbag so that the deployment side faces the center of the tire. Ru.



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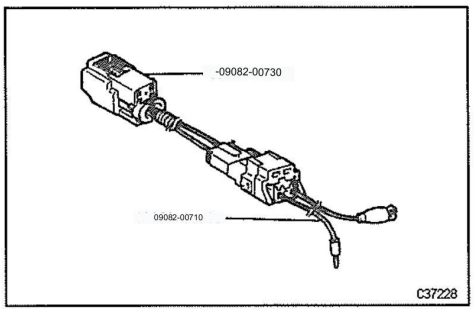


5 Side airbag deployment

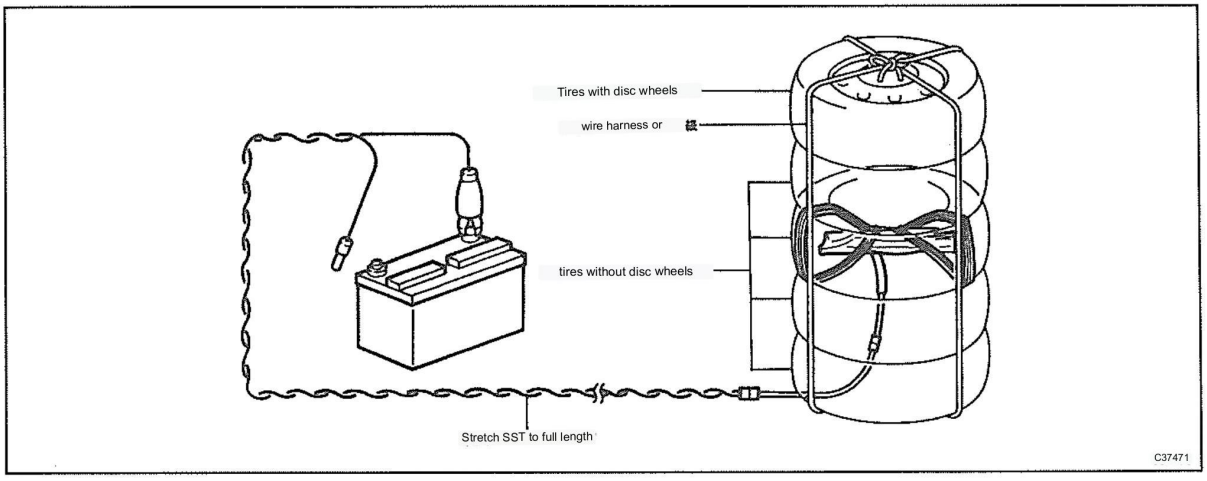
Always deploy side airbags outdoors. (1) Attach the airbag deployment wire to the airbag deployment wire.

Attach the component wire sub-harness 1. (2)

S S T 09082-00710 09082-00730

Short-circuit the SST alligator mouth and terminal.

(3) Connect the SST connector and the airbag connector (yellow 2P).



(4) As shown in the diagram, stack two tires on top of each other, then stack the tire with the side airbag ASSY fixed on top of it, then place one or more tires on top of that, and a tire with a disc wheel on top.

(5) Fix the tires together with wire harnesses, strings, etc. to prevent them from scattering when deployed.

Try to stop it.

(6) Place the battery in the fully extended position of the SST from the side airbag.

Place the lee.

(7) After confirming the safety of the vehicle interior and surrounding area once again, the SST crocodile

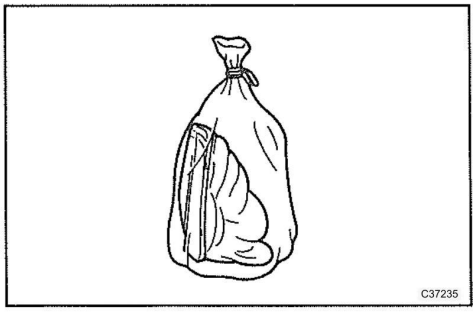
Connect the mouth to the battery day.

(8) Connect the SST terminal to the battery and deploy the airbag.

Be sure to shout out a warning before deploying.

14

Side airbag disposal instructions



Never dispose of a side airbag in an undeployed state (1)

Place the deployed side bag in a plastic bag, seal it, and dispose of it.

- Since the unfolded side bag is extremely hot, please do not Leave it for 30 minutes.
- Do not splash water on the unfolded side bag.
- Wear safety glasses and gloves when handling the unfolded side bag.
- Be sure to wash your hands with water when you finish working.

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15 body

"Precautions for vehicles equipped with SRS airbags"

This section contains maintenance tasks that affect the SRS airbag. Applicable maintenance work is marked with a star (★) in front of the title in the table of contents and in the main text, so please read the SRS airbag precautions in this manual before performing the work.

front bumper 15-5
Preparation 15-5
items. Front bumper 15-6
Mark II ..... 15 - 6
Exploded configuration diagram 15-6
Points to note during disassembly work 15-7
Points to note during assembly work ..... 15 — 7
chaser 15-8
Exploded configuration diagram ..... 15 — 8
Cresta 159
Exploded configuration diagram of 脫幹 15-9
rear bumper 15-10
Preparation items 15-10
rear bumper 15-11
Mark II 15-11
Disassembled configuration diagram 15-11
Points to note during disassembly work 15-12
Points to note during assembly work 15-12
| Chaser 15-13
Exploded configuration ..... diagram
15-13 Cresta 15-14
Disassembled configuration diagram ..... 15 - 14
Rear spoiler 15-15
Preparation 15-15
items: Rear spoiler 15-16
Denutrient decomposition ..... diagram 15-16
Rear spoiler removal 15-17
Points to note during installation work 15-17
Front & rear door preparation 1519
items 15- 19
front door 15-20
| Mark II Chaser 15-20
Exploded configuration ..... diagram
1520 Front door disassembly 15- 21
Points to note during assembly work 15-23
Cresta 15-27
Exploded configuration diagram ..... 15 — 27
Front door disassembly 15-28
Points to note during assembly work 15-30
Rear door..... ..... 15 - 32
Mark II Chaser 15 ..... - 32
Exploded configuration diagram ..... 15 - 32
Rear door disassembly 15-33
Points to note during assembly work 15-34
|Cresta 15-38
Exploded configuration diagram ..... 15 - 38
Rear door disassembly 15-39
Points to note during assembly work ..... 15 - 40
Food support 15- 41
preparations 15 41
food support 15-41
Luggage 15-41
door hinge
Torsion bar... 15 - 42
Preparation 15- 42
items Luggage door hinge torsion bar 1542
Nurturing configuration ..... diagram 15- 42
luggage door hinge torsion bar
Removal..... 15-43
Points to note during installation work 15-43
Nameplate 15-44
Preparation items 15-44
Nameplate ..... 15 — 44
Paste reference position 15-44
Molding &
Garnish... 15-47
Preparations 15-47
luggage compartment door
Outside garnish 1548 15
Diagram ..... - 48
of roof drip molding ..... 15 - 49
Mark II Chaser 15-49
Decomposition ..... diagram 15-49
Door window frame molding 15-50
Cresta 15-50
脫離configuration diagram 15-50
front door window frame
Removal of molding related parts 1551
front door window frame
Molding removal 15-51

15

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front door window frame
Molding installation 15 51
Rear door window frame molding
Removing related parts 15-53
rear door window frame
: Molding removal 15-53
rear door window frame
Molding installation 15-53
Outside molding 15-54 Furnace ..... configuration
diagram ..... 15 - 54
Outside molding removal 15- 54
Outside molding installation 15-55
outside lower molding 15-57
Police escape configuration diagram 15-57
Windshield glass
& molding... 15-58
Preparation 15-58
items Windshield glass &
Molding... 15-59
Removal/installation 15-59
configuration diagram Windshield glass related parts removal 15-60
windshield glass &
Molding removal... 15-60
Points to note during installation work 15-61
Windshield glass related parts installation 15-63
back window glass &
Molding 15-64
Preparation items 15-64
back window glass &
Molding 15-65
Configuration diagram 15-65
Removal of back window glass related parts 15-66
Back window glass &
Molding removal...1567
Points to note during installation work 15-67
sliding roof· ..... 15 — 69
preparations, ... 15-69
Parts layout diagram 15-69
Circuit diagram 15-70
Functional inspection 15-71
sliding roof ..... 15 — 72
Disassembled configuration ..... diagram 15-72
Sliding roof removal 15 ..... - 73
Points to note during installation work 15-74
sliding roof adjustment 15-74
Individual inspection/ 15-75
sliding roof switch 15-75
courtesy lamp switch ..... 15 — 75
★Instrument panel 15-76
Preparation 15- 76
items List of bolts, screws, and nuts used 1576
★Instrument panel· 15-77
★Fuyin configuration diagram 1577
★Instrument panel safety
Bad ASSY removal 15-78
Exploded configuration diagram 15-81
roof headlining 15-82
Preparation ..... items 15-82
Roof headlining 15-82
Diagram of deburring structure 15-82
Roof headlining removal 15-83
★Front manual sheet ..... 15 - 85
☆Yu Sai exploded configuration ..... diagram 15-85
★Front seat disassembly 15-86
Points to note during assembly work 15-87
Points to note during installation work 15-88
★Front power seat 15-89
Preparation 15-89
items ★Front power seat 15-90
★Disassembled configuration diagram 15-90
★Front power seat disassembly 15-91
Points to note during assembly work 15-92
Parts layout diagram 15-93
Circuit diagram ..... 15 — 94
Individual inspection/ 15-95
Power seat switch 15 95
power seat motor ..... 15 — 95
Lumbar support switch 15-96
lumbar support motor ..... 15 — 96
rear seat 15-97
Decomposition 15-97
diagram Front &
rear seat belt 15-98
Front seat belt 15-98
Deconfiguration diagram ..... 15 — 98
Retractor inspection 15-98
Rear seat belt 15-99
Deconfiguration ..... 15 - 99
diagram Retractor inspection 15-99
Points to note during installation work 15-100
Electric tension reducer 15-101
Preparation ..... items. 15-101
Parts arrangement 図 ..... inspection.. 15-101
Individual 15-102
front seat inner belt 15-102
Front seat outer belt 15-102
Installation adjustment 15-103
Preparation items. 15-103
Body installation adjustment 15-104
Price reference value 15-106
power window 15-108
preparations, ... 15-108

15

times
CONTENT UPLOADED BY
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Parts distribution diagram 15-108
Functional check 15-109
Power window inspection 15-109
troubleshooting 15-110
How to proceed with troubleshooting 15-110
How to read the flowchart 15-110
List of malfunction phenomena 15-110
Circuit diagram/ 15-111
unit inspection 15-123
main relay 15-123
multiplex network master
Switch (MPX Master Switch) 15-123
multiplex network switch
(MPX switch) 15-125
Power window motor 15-125
unlock warning switch 15-126
courtesy lamp switch 15-126
multiplex network body
Computer (MPX body computer) 15-127
electric door lock 15-128
Preparation ..... items. 15-128
Parts layout diagram 15-128
Functional check 15-129
Electric door lock inspection 15-129
Vehicle speed auto door lock settings 15-130
troubleshooting 15-131
How to proceed with troubleshooting 15-131
How to read the flowchart 15-131
List of malfunction phenomena 15-131
circuit diagram 15-132
crash detection sensor 15-141
Pipe configuration diagram 15-141
Points to note during attachment/detachment ..... work 15-142
Individual inspection/ 15-143
Multiplex Network Master Switch
(MPX Network Master Switch) 15-143
Door control switch (for key interlocking) 15-144
door lock motor 15-144
Unlock warning switch 15-144
Courtesy lamp switch 15-145
Speed sensor
(in combination meter) 15-145
Multiplex network body
computer (MPX body computer) 15146
multifunction
remote control 15-147
Preparation 15-147
items Notes 15-147
Parts layout diagram 15-148
Functional inspection/ 15-149
Wireless door lock remote control inspection... 15-149
Troubleshooting 15-150
How to proceed with troubleshooting 15-150
How to read the flowchart 15-150
List of malfunction phenomena 15-150
Circuit 15-151
& Door Control Receiver — &
Transmitter...15154
Transmitter battery replacement 15-154
Door control receiver &
Transmitter replacement 15-155
Individual inspection... 15-159
door control transmitter 15-159
luggage door lock relay 15-160
luggage door lock actuator 15-160
door control receiver — 15-161
Outer rear view mirror 15-162
Preparation items. 15-162
parts layout diagram 15-162
Functional check 15-163
Electric folding door mirror function 15-163
check Outer rear view mirror 15-164
Outer rear view mirror removal 15-164
Points to note when disassembling and reassembling work (door mirror) 15-164
Individual inspection/ 15-164
mirror heater relay 15-164
Outer mirror switch 15-165
mirror heater switch
(Cars with mirror heaters) 15-166
Outer rear view mirror 15-166
Warning for forgetting to remove the key
System 15-168
Preparation items 15-168
Parts layout diagram 15-168
Functional check... 15-169
Warning function check for forgetting to remove the key 15-169
troubleshooting 15-170
How to proceed with troubleshooting 15-170
How to read the flowchart 15-170
Malfunction phenomenon ..... list 15-170
Circuit diagram/ 15-171
Individual inspection/ 15-176
Unlock warning switch 15-176
courtesy lamp switch 15-176
multiplex network body
Computer (MPX body computer)..... 15-176
illuminated entry
System 15-177
Preparation items 15-177
Parts layout diagram 15-177
Functional ..... inspection .....
15-178 Illuminated entry system functional inspection 15-178

15

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troubleshooting· ····· 15-179
How to proceed with troubleshooting ····· 15-179
How to read the flowchart ····· 15-179
List of current defects ····· 15-179
circuit· ····· 15-180
Individual ····· inspection/
15-186 Unlock warning switch ····· 15-186
courtesy lamp switch ····· 15-186
Door control switch (for key interlocking) ····· 15-186
door lock motor ····· 15-186
multiplex network master
Switch (MPX Master Switch) ····· 15-187
multiplex network body
Computer (MPX body computer) 15-188
Warning for forgetting to turn off the lamp
System 15-189
Preparation items ····· 15-189
Parts layout diagram ····· 15-189
Functional check... ····· 15-190
Warning system function check for forgetting to turn off the lamp 15-190
troubleshooting· ····· 15-191
How to proceed with troubleshooting ····· 15-191
How to read the flowchart ····· 15-191
List of malfunction phenomena ····· 15-191
Circuit diagram ····· 15-192
unit inspection ····· 15-194
Unlock warning switch ····· 15-194
courtesy lamp switch ····· 15-194
Multiplex Network Body
Computer (MPX Body Computer) 15-194

15

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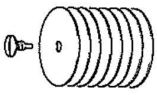
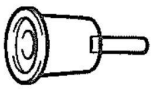
TC049407

front bumper

Preparation items

tool

 OS030-00010	Tape removable disk	For bumper molding cleaning
 (OKO90-00030)	Holder	For bumper molding cleaning
Electric drill or air drill (09050-00031) 11212		For bumper molding cleaning
clip remover 10801		For clip removal

Oils and fats/others

protective tape 53501	For preventing scratches
infrared lamp 53201	Bumper molding removal and removal
white gasoline 32701	For cleaning each part
safety glasses 55201	For bumper molding cleaning

15

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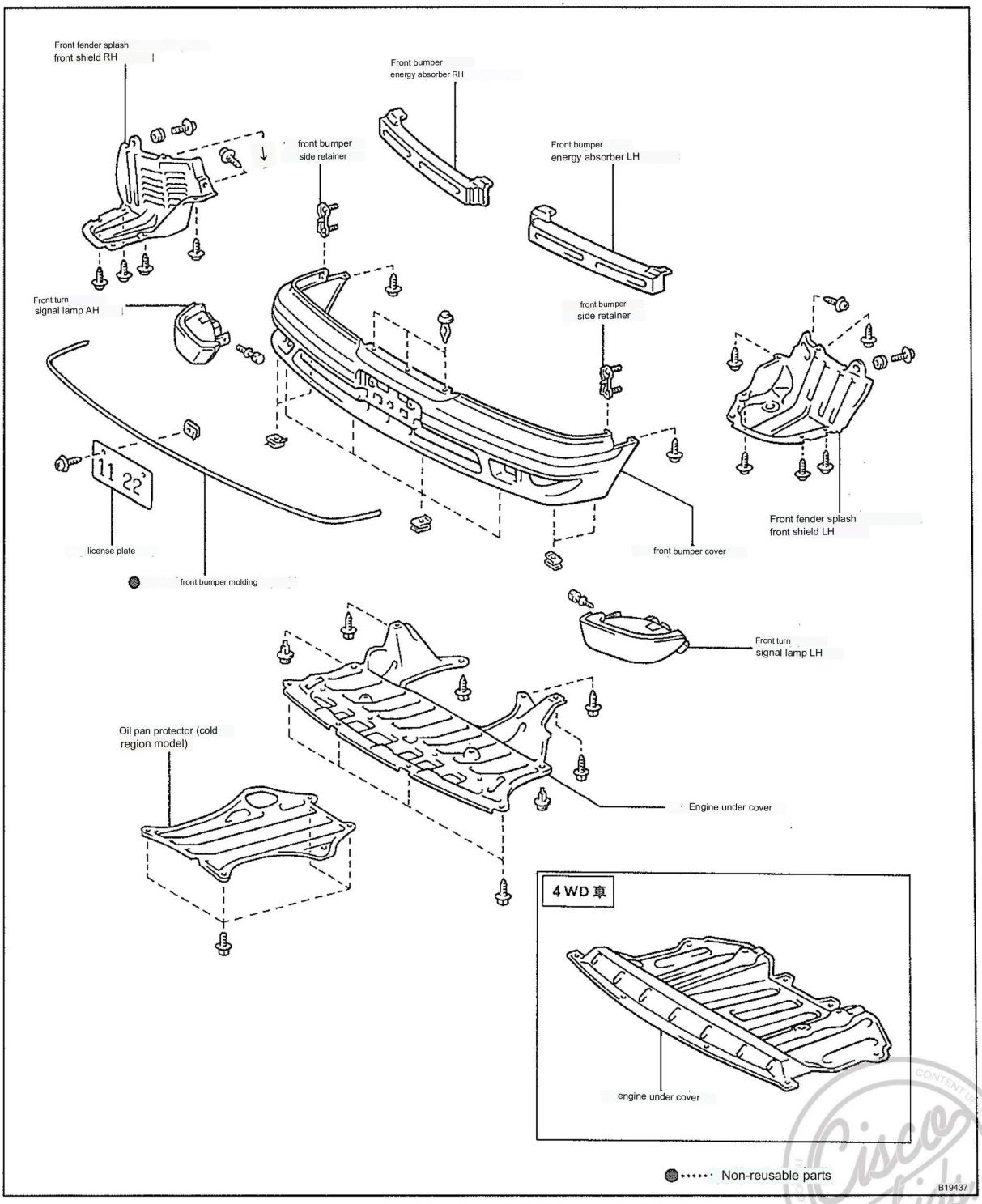
T0040406

front bumper

Mark II

Exploded configuration diagram



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Points to note during disassembly work

1 Bumper molding removal

(1) Apply protective tape to the outer periphery of the molding. (2) Using a scraper covered with protective tape, gradually peel off the adhesive from one side and remove the pamper molding.

Points to note during assembly work

1 Bumper molding installation (1)

Bumper cleaning

Cleaning with rag

① Warm up the acrylic foam tape remaining on the bumper using an infrared lamp or similar device.

(**) 1-2 minutes at 40-60℃

② Remove any remaining acrylic from the pumper by heating it with an infrared lamp etc.

Remove the foam tape by rubbing it with a rag.·

注意 Remove the molding with the acrylic foam tape remaining.

Do this until it is removed completely, as it may cause poor adhesion.· If you remove it with a screwdriver, etc., the bumper groove may be damaged and the contact may be damaged.

猶 Scrape it off with a rag, etc., as it may cause defects.

③ Clean the adhesive surface with white gasoline.

Cleaning with removable disk

注意 Apply protective tape to the outer circumference of the bumper molding.

① Set 5 discs in the holder and attach them to a を removable disc air drill or electric drill.

注意 Use an electric drill with a no-load rotation speed of 2000 to 3000 r/min. ② Wear safety glasses and scrape off the acrylic foam tape.

注意 · Pay attention to the direction of rotation of the disc and the direction of work progress.

· Visually check the cut part to avoid damaging the bumper cover by cutting too much. Do this while checking. ③

Clean the adhesive surface with white gasoline.

(2) Bumper molding installation

① Align boss a of the molding with the pumper.

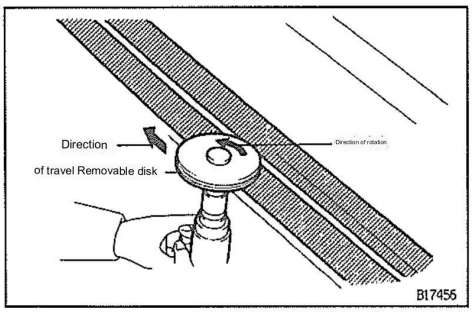
② Paste the molding along the groove from boss a to boss b. Attach. ③

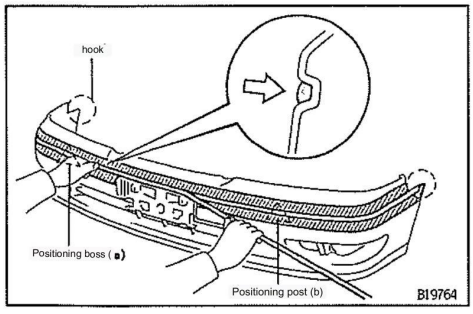
Paste along the groove from boss b to pumper left hook. Ru.

④ Paste along the groove from boss a to bumper right hook.

注意 · Perform the bumper molding pasting work at an ambient temperature of 20°C or higher. If the ambient temperature is less than 20°C, warm the thin part of the bumper and bumper molding to 20~30°C using an infrared lamp, etc. before pasting the bumper molding. TENT

• the release paper from the acrylic foam tape without touching the adhesive surface before applying it.





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Resurrection
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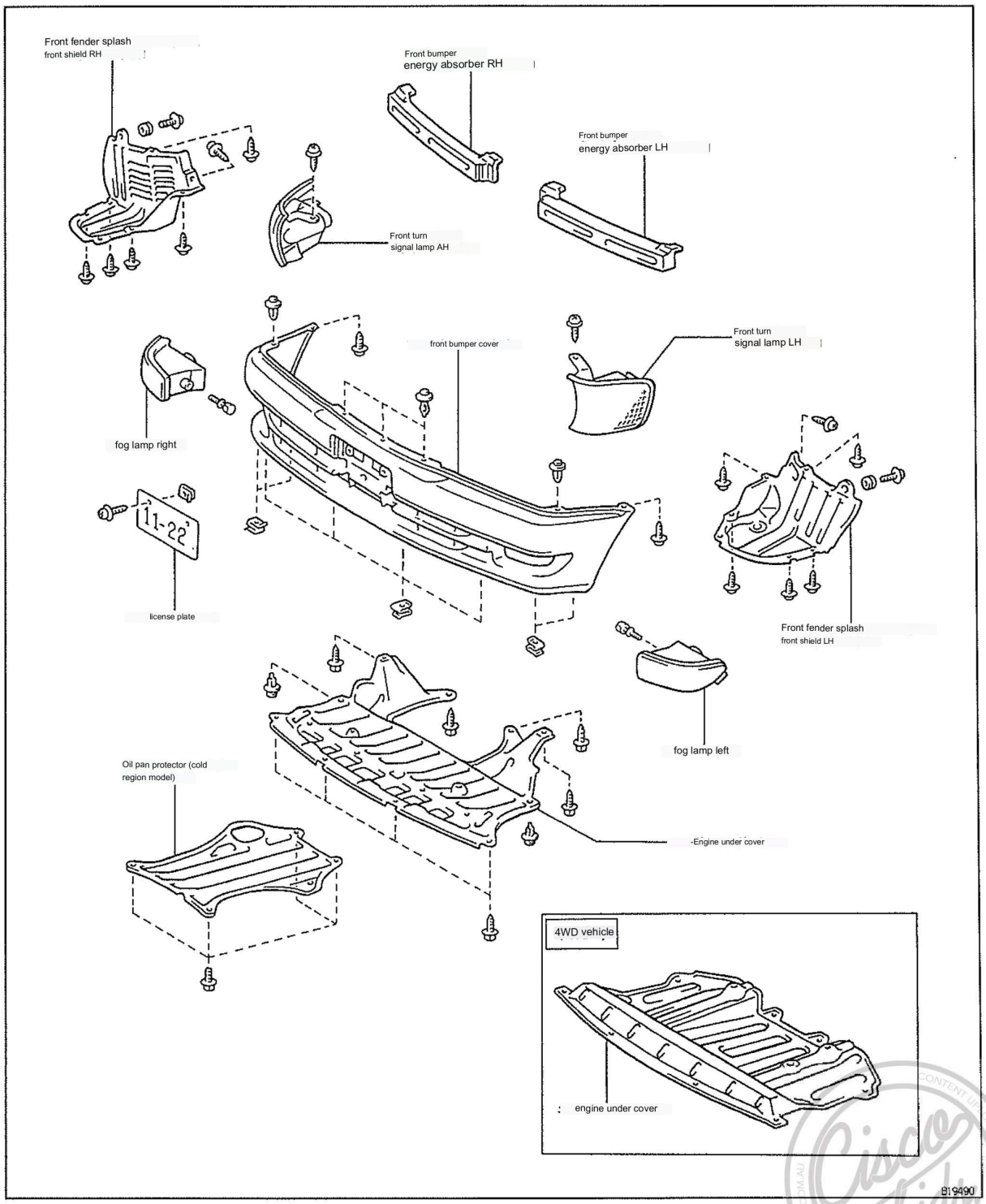
chaser

Detachable exploded configuration diagram



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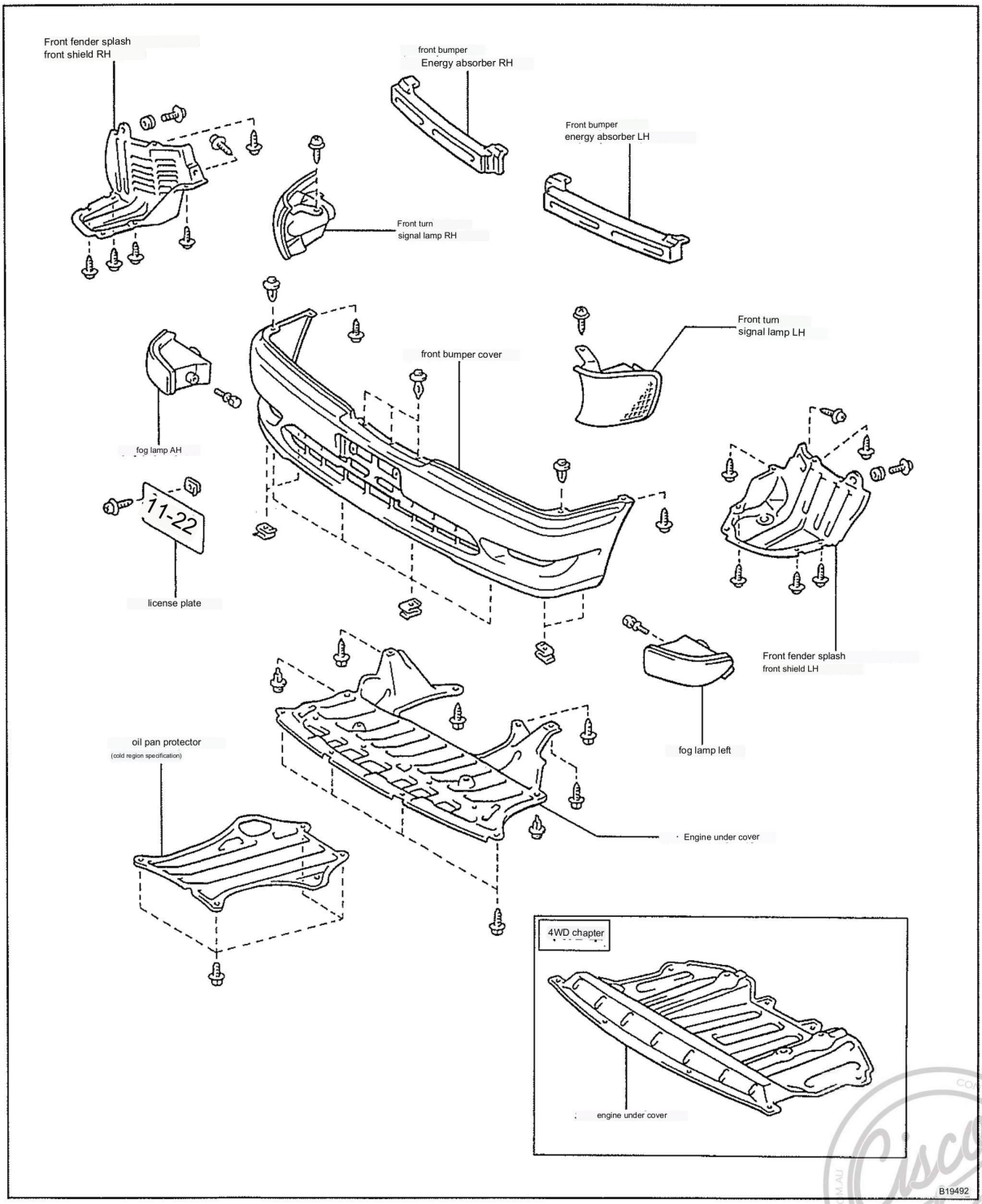
Cresta

Detachable exploded configuration diagram



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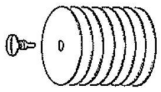
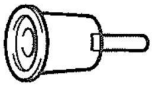
T0049408

rear bumper

preparation Goods

tool

 OS030-00010	tape removable disk	For bumper molding cleaning
 (0K090-00030)	holder	For cleaning pamper molding
Electric drill or air drill (09050-00031)	11212	For bumper molding cleaning
roof molding remover 09070-20010	70028	Quarter outside molding removal For sushi
clip remover	10801	For clip removal

Oils and fats Others

protective tape	53501	For preventing scratches
infrared lamp	53201	Bumper molding removal and removal
white gasoline	32701	For cleaning each part
safety glasses	55201	For bumper molding cleaning

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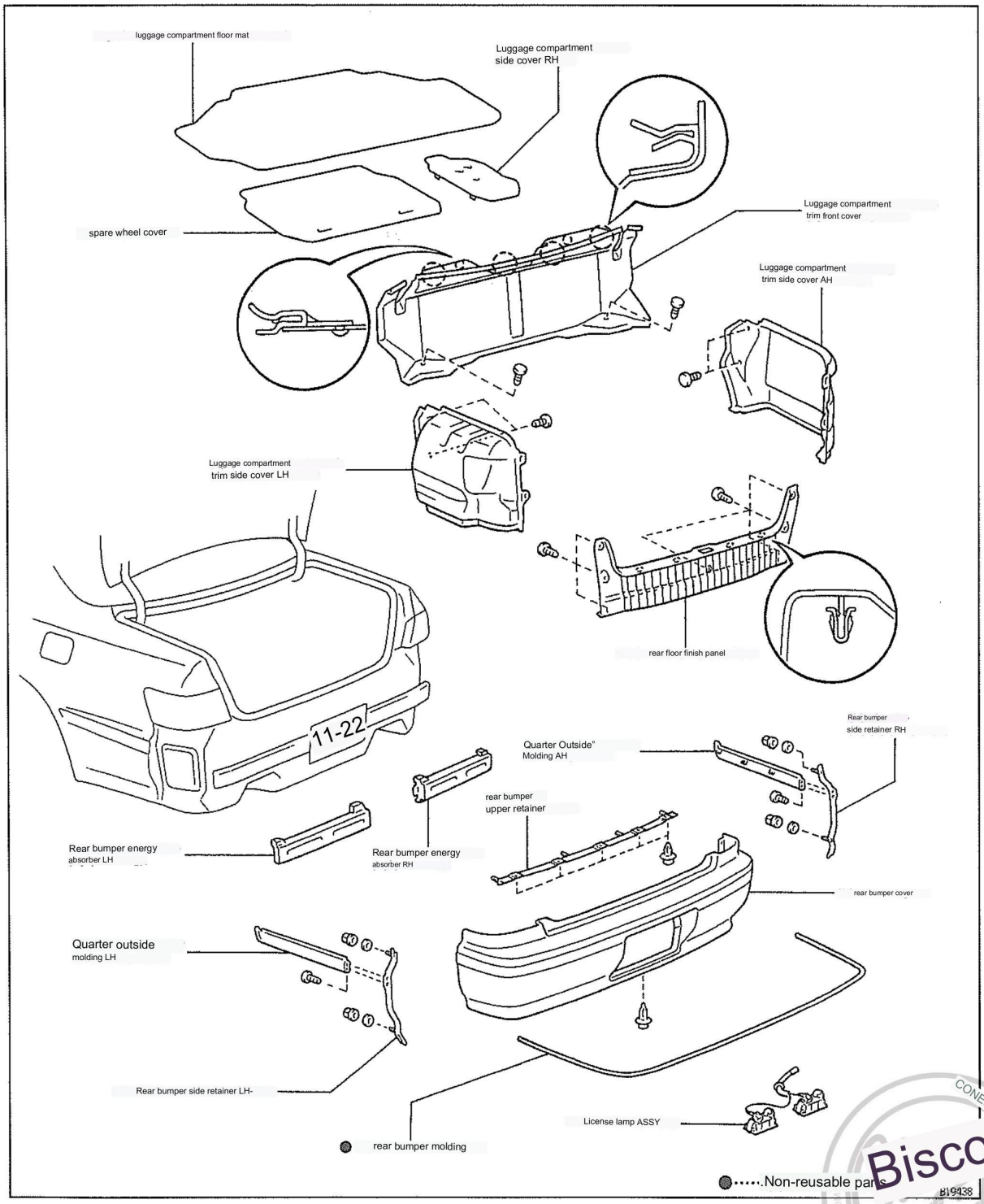
T0049409

rear bumper

Mark II

Disassembled configuration diagram



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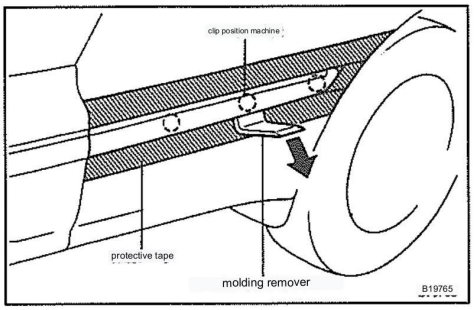

Points to note during disassembly work

1 Removing the rear bumper cover

(1) Bumper cover and quarter outside molding When installing and removing, apply protective tape to the quarter panel to prevent damage to the body side.

(2) Using a molding remover, separate the quarter outside molding clip from the body.

(3) Remove the four side tightening nuts of the bumper cover.

2 Bumper molding removal

(Refer to "Front bumper" - "Points to note when disassembling work")

Points to note during assembly work

1 Bumper molding installation

(Refer to "Front bumper" - "Notes on assembly work")

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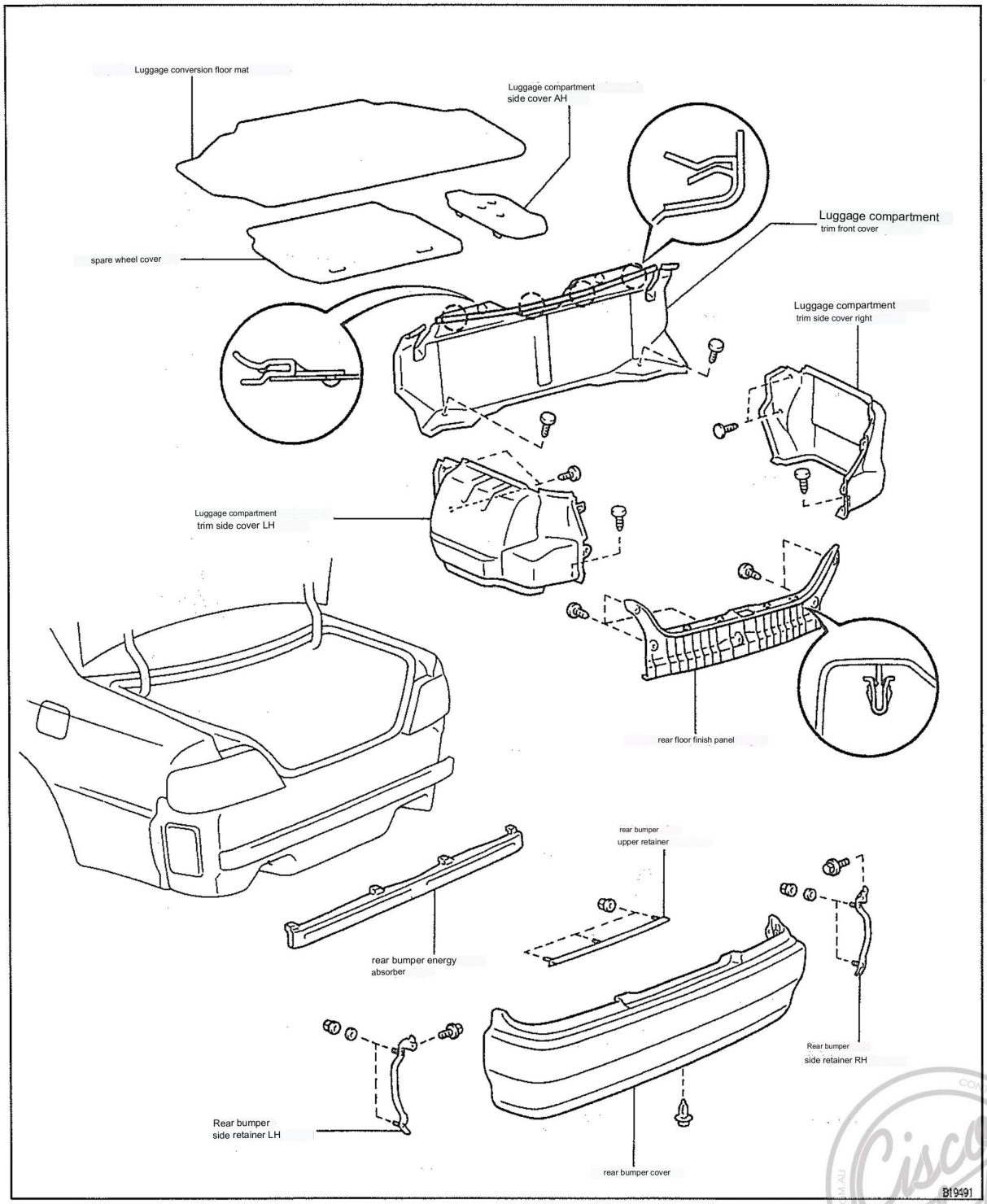
chaser

Detachable exploded configuration diagram



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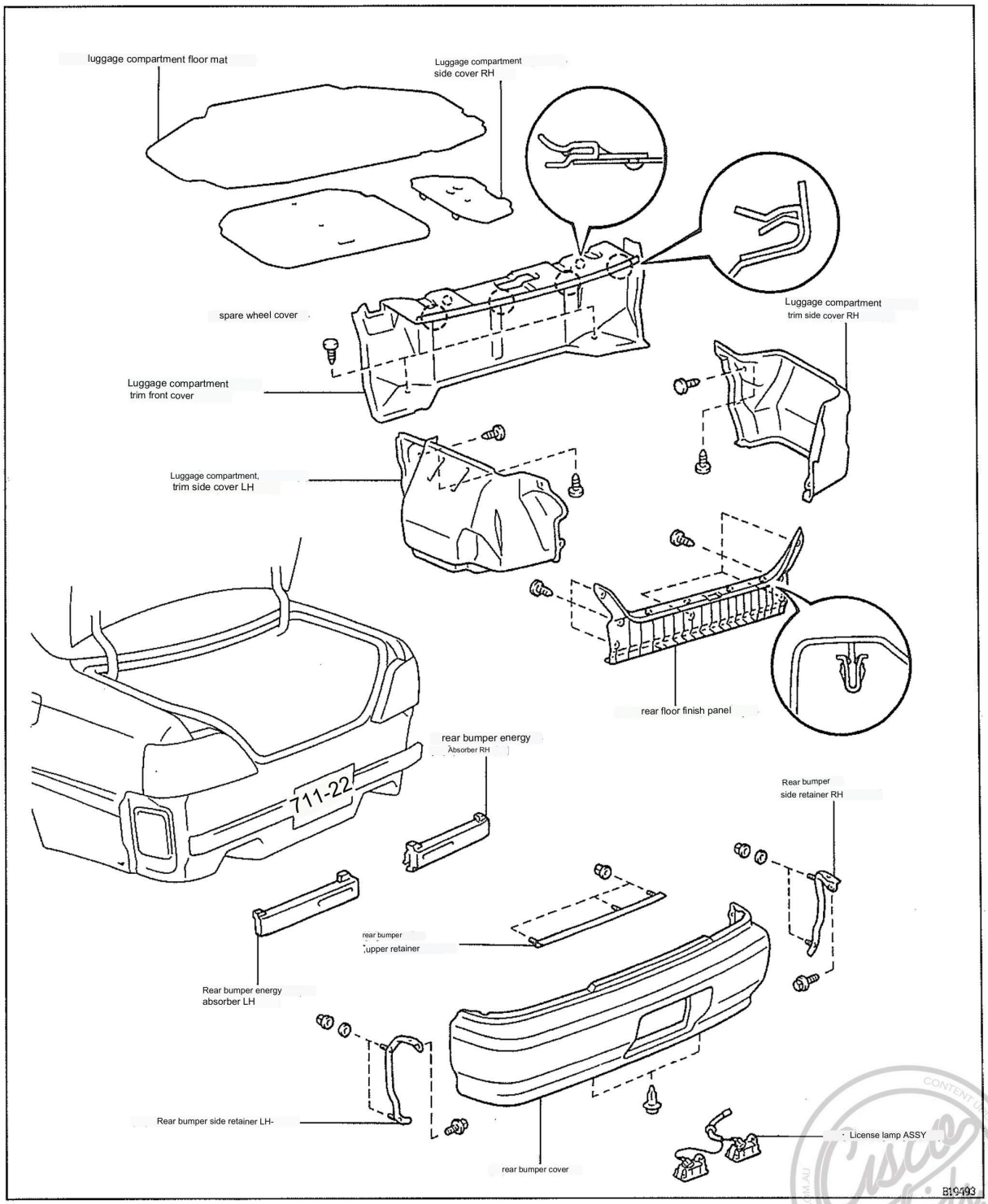
Cresta

Detachable exploded configuration diagram



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steamed noodles

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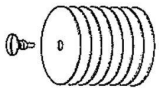
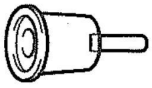
T0049410

rear spoiler

Preparation items

tool

	OS030-00010 Tape removable disk	For cleaning protector
	(0K090-00030) Holder	For cleaning protector
Electric drill or air drill (09050-00032) 11213		For cleaning protector
Side molding removal tool set 10901		Rear spoiler removal and installation *
mighty blur 53901		Rear spoiler removal and installation
Polybella (width 75mm) 11501		
Piano wire (Φ0.6mm×50cm) 52002		Rear spoiler removal and installation
Plastic tape (50m roll) 11401		Rear spoiler removal and installation
Remover Bond 7 (0.5L) 11601		Rear spoiler removal and installation
clip remover 10801		For clip removal

Oils and fats/others

infrared lamp 53201	Rear spoiler removal and installation
safety glasses 55201	For cleaning protector
white gasoline 32701	For each cleaning
protective tape 53501	For preventing scratches

*····· Sueoka Shoten Co., Ltd. Automotive Repair Products Division 2-5-1 Gokisho-cho, Showa-ku, Nagoya TEL (052)882-9266 (Main)

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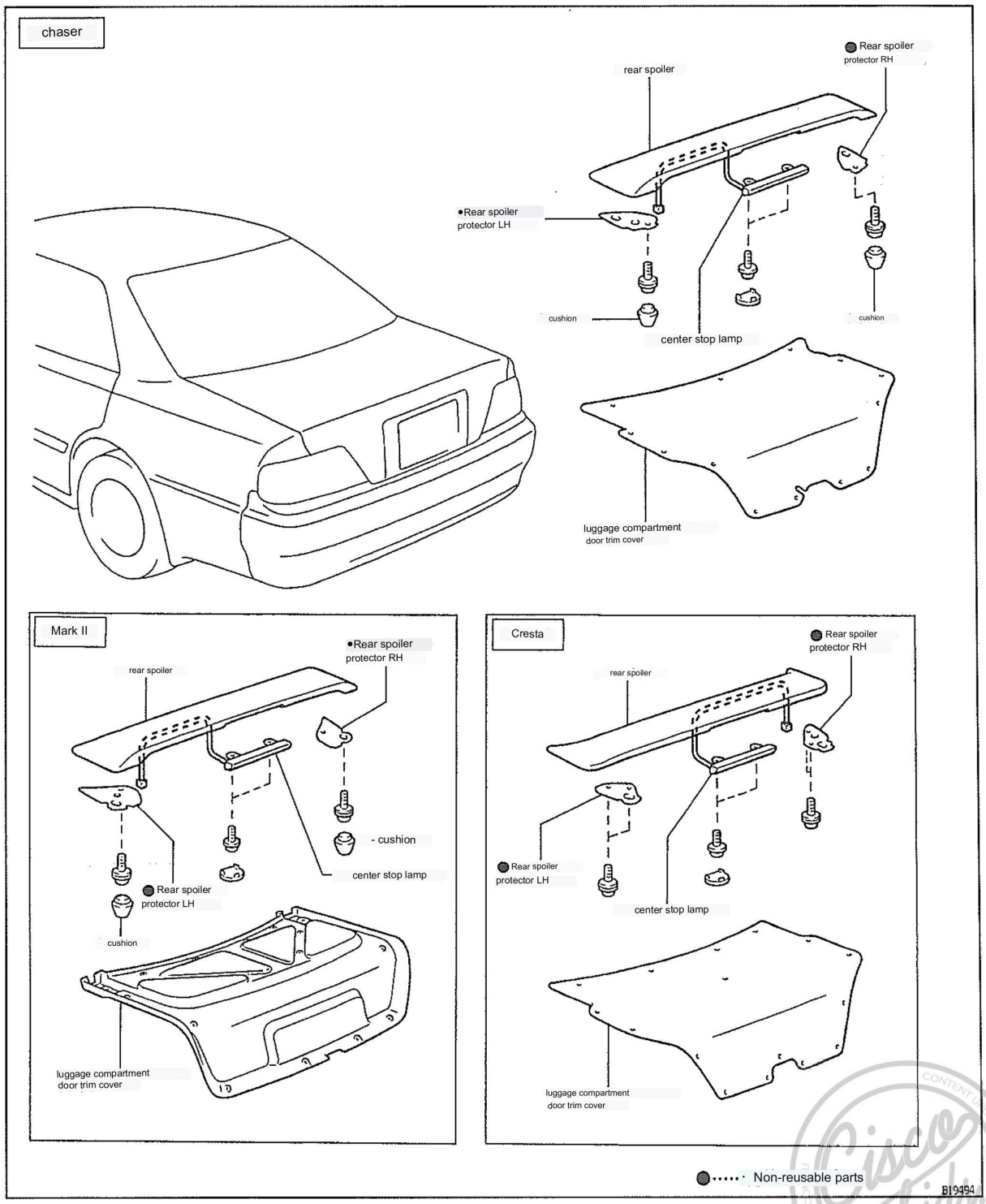
T0048411

rear spoiler

Nutrient decomposition diagram



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Rear spoiler removal

1 Removal of luggage compartment door trim cover

2 Removal of rear spoiler

(1) Disconnect the connector and place it inside the spoiler.

(2) Remove the two bolts. (Cresta, 4 bolts only)

(3) Apply protective tape (plastic tape) around the spoiler.

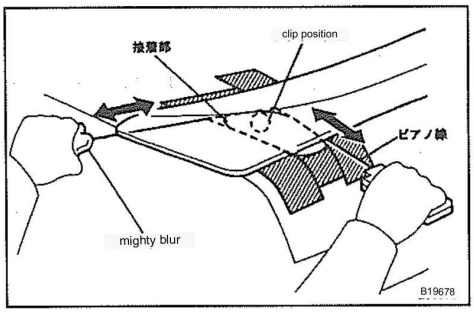
(4) Warm up the spoiler with an infrared lamp, etc.

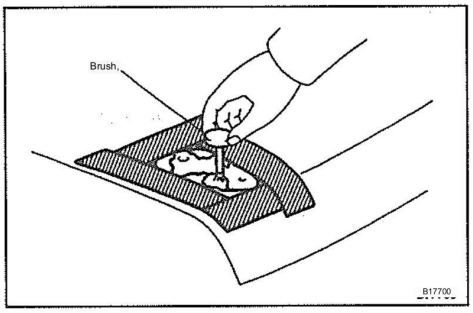
<Reference> 3-5 minutes at 40-60℃

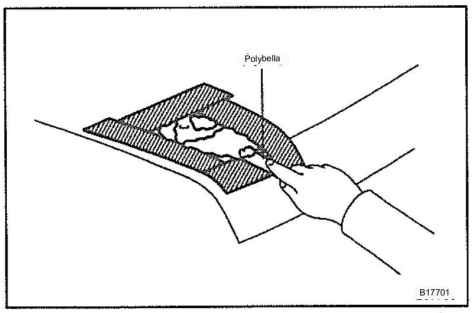
(5) Set the piano wire on the Mighty Puller.

(6) Cut the adhesive part with piano wire.

CAUTION When reusing the spoiler, place the Mighty Puller along the body as much as possible to avoid damaging the spoiler edges. (7) Remove the two caps and two bolts, and remove the center stop lamp.







Points to note during installation work

1 Cleaning the mounting surface on the vehicle side When using solvent

(1) Apply protective tape (plastic tape) all the way around the protector remaining on the body.

<Reference> To protect the body, it is recommended to apply masking paper etc. around the plastic tape.

(2) Apply Remover Bond 7 as thickly as possible to the protector remaining on the body using a polystylus or brush.

•Caution · Shake the can of Remover Bond 7 well before using. - Remover Bond 7 should not be used on air-dry paint films.· If Remover Bondo comes into direct contact with the painted surface, it may cause blisters on the paint film, so wipe it off immediately. - If blistering occurs on the paint film, heat the defective area to 80°C with an infrared lamp, and repeat the process several times every 4 to 5 minutes by covering it with a cloth soaked in thinner to allow the paint to penetrate.

(3) Warm up the protector remaining on the body using an infrared lamp, etc.

注意 If you heat it until the surface becomes white and dry, it will be difficult to remove the protector in the next step, so stop heating before that.

<Reference> 3 to 5 minutes at 40 to 60°C

(4) Scrape off the protector remaining on the body using a polyvera.

PLACE After making the protector sufficiently thin, move on to the next process.

(5) Apply Remover Bond 7 again to the protector remaining on the body.

(6) Warm up the protector remaining on the body using an infrared lamp,

注意 etc. Allow the inside of the protector to dry. (The surface dries white)

<Reference> CONTENT UPLO for 40-60℃ (7) Scrape off the protector remaining on the body with a rag.

(8) If the protector remains after the work in (7), use the remover bond. Apply No. 7 and scrape it off with a poly-scratcher.

(9) Peel off the plastic tape and clean the body with white gasoline.

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10-15 minutes at
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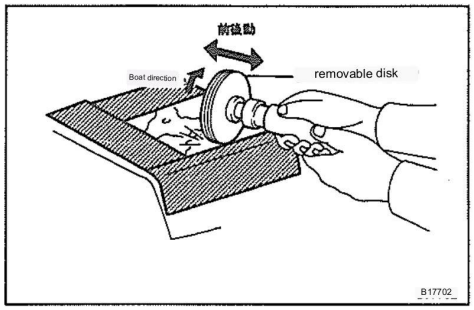
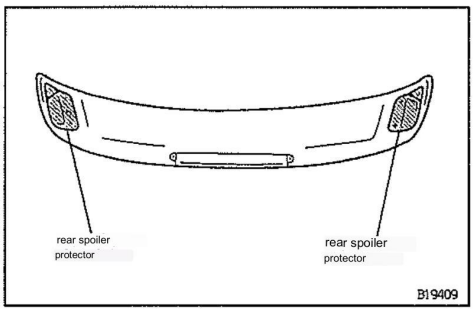


When using tape removable disks

(1) Apply protective tape (plastic tape) all the way around the protector remaining on the body.
<Reference> To protect the body, it is recommended to apply masking paper, etc. around the plastic tape. (2) Set 8 discs in the holder and insert the removable disc.
Install with an air drill or electric drill. Use an electric drill with a no-load rotation speed of 2000~3000r/min. do.
(3) Wear safety glasses and scrape off the protector. •Caution - to the direction of rotation of the disc and the direction of work
• progress. Visually check the cut area to avoid damaging the body by cutting too much.
Do it while doing it.
(4) Clean the adhesive surface with white gasoline.

2 Rear spoiler cleaning (when reusing spoiler)

· As with the vehicle mounting surface, remove the protector using a solvent. except.



3 Rear spoiler ASSY installation

(1) Attach new rear spoiler protectors to the back of the rear spoiler in the positions shown in the illustration.
(2) Warm the spoiler and body surface with an infrared lamp, etc. before installing.
Let's go.
<Reference> 40~60°C
(3) After installation, check whether the luggage door can be opened and closed smoothly and whether the door will remain in its position when fully opened.
(Refer to "Body" - "Luggage door hinge torsion bar")

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T0048412

front & rear door

preparation Goods

tool

	09042-00010 Torx socket wrench (T30)	Door lock/detachment
Width across flats 4mm hexagon wrench 10503		For adjusting door glass
clip remover 10801		For clip removal

Oils and fats/others

Toyota genuine body grease 31003	For application to each sliding part
butyl tape set 52101	For installing service hole cover
protective tape 53501	For preventing scratches

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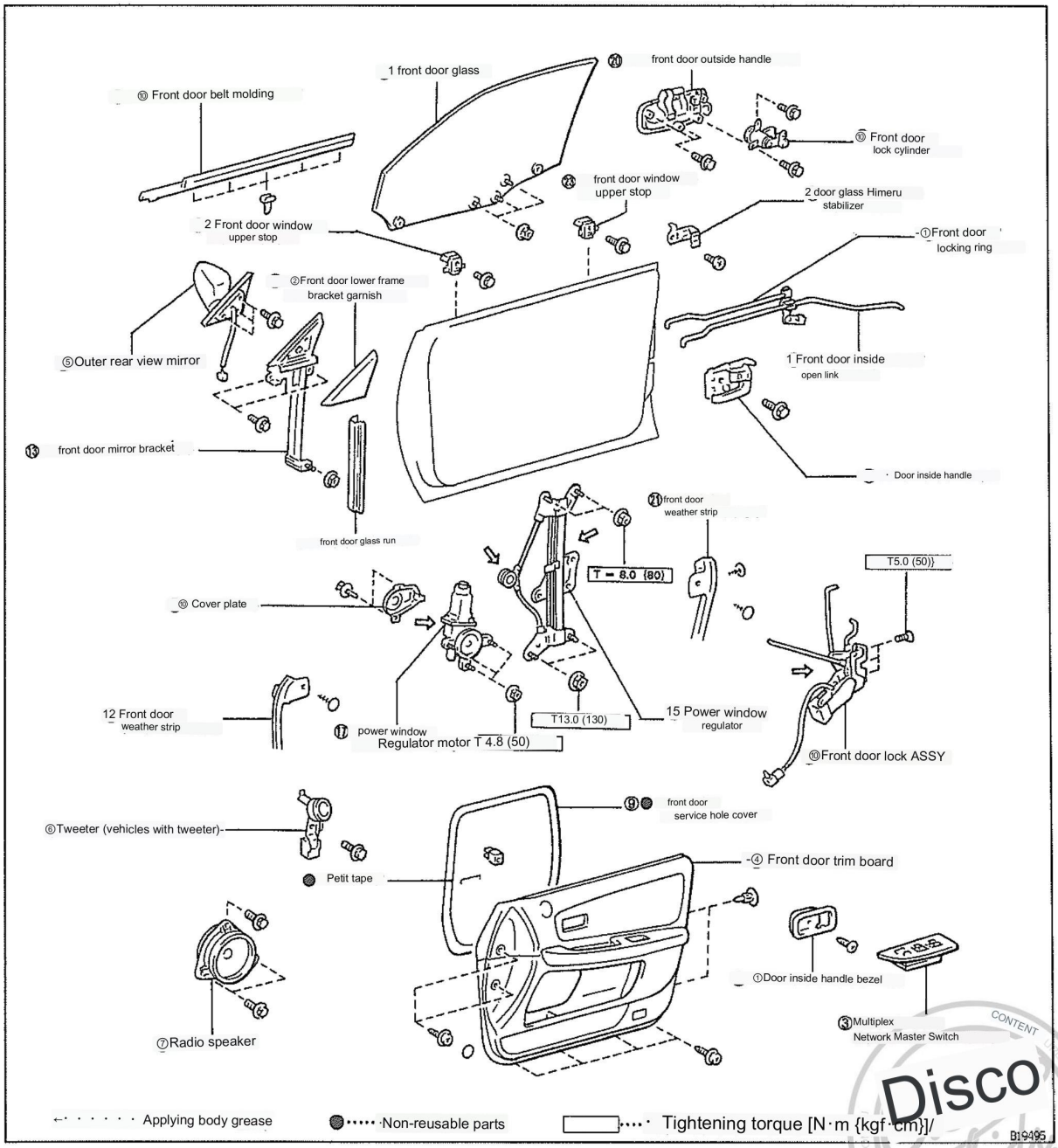
Front door

Mark II Chaser

Exploded configuration diagram

〈参考〉 The numbers given to the part names are examples of installation and removal procedures.



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front door disassembly

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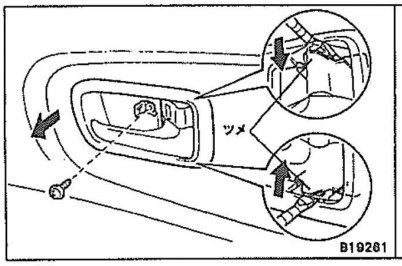

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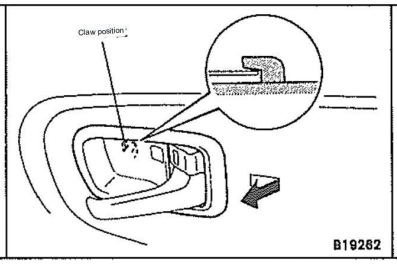

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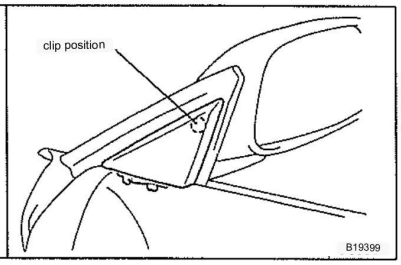

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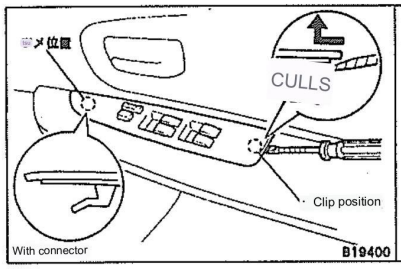

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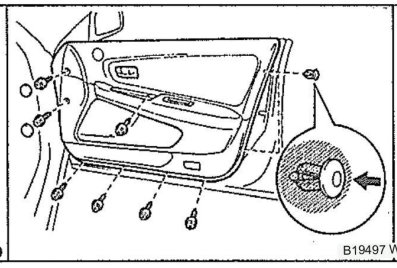

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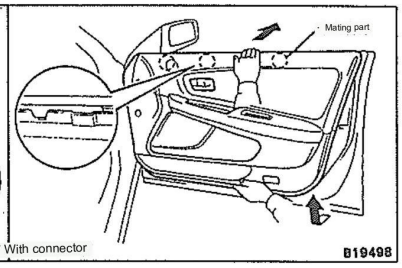

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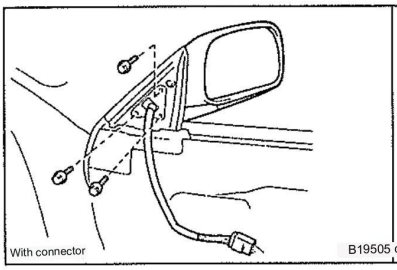

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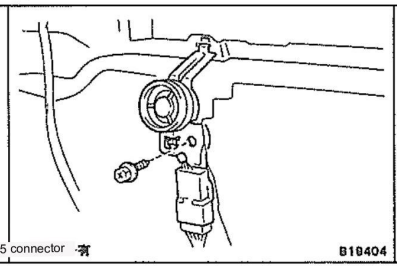

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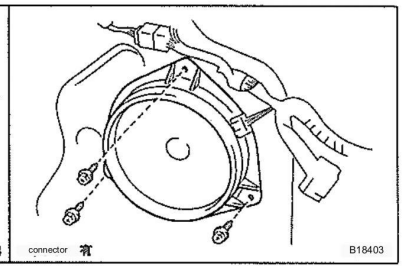

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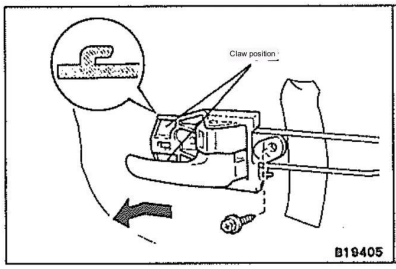

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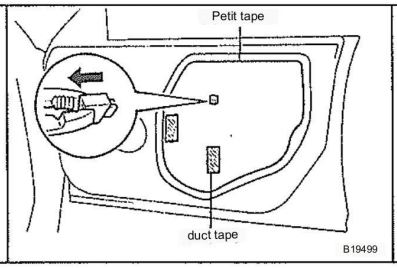

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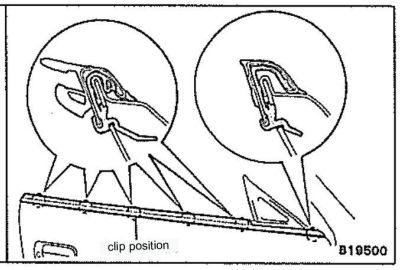

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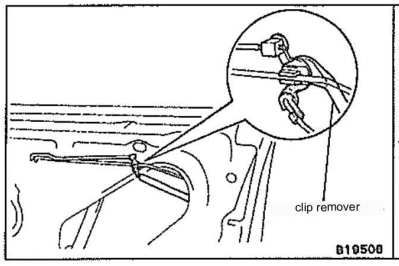

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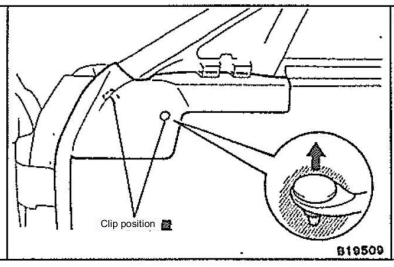

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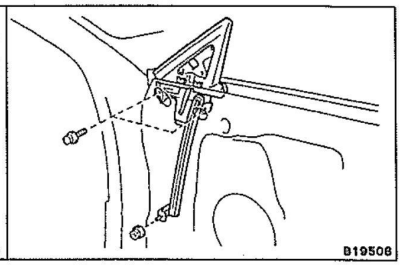

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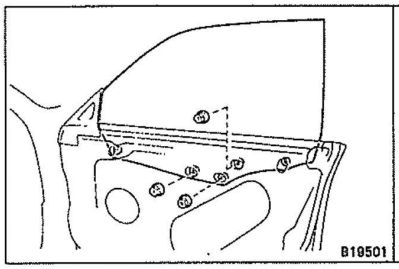

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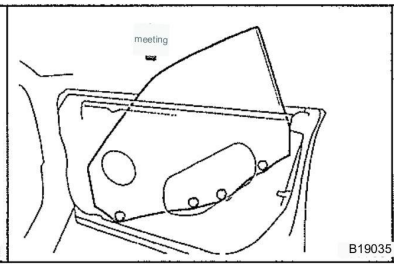

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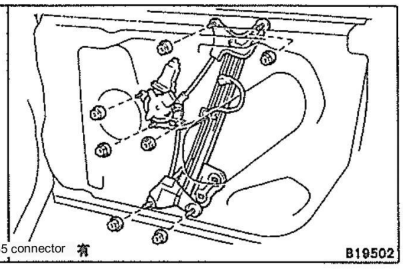
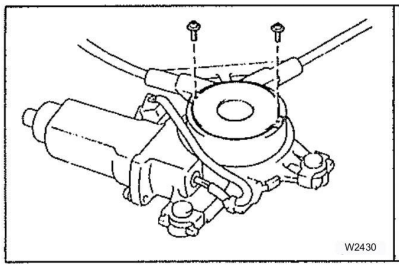


⑯ (When replacing regulator)



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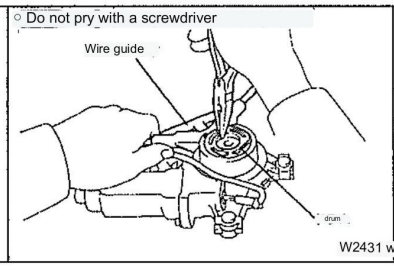

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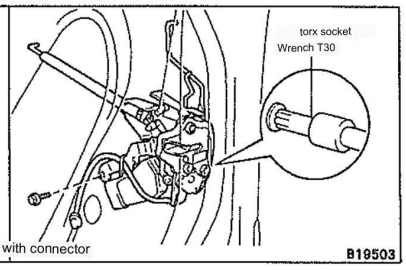

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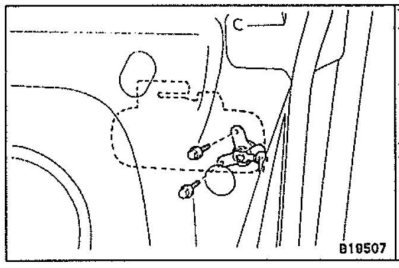

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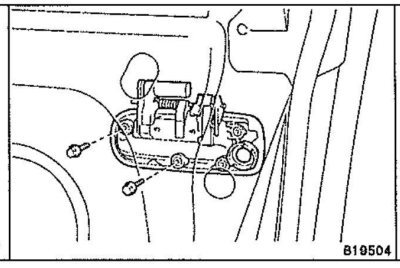

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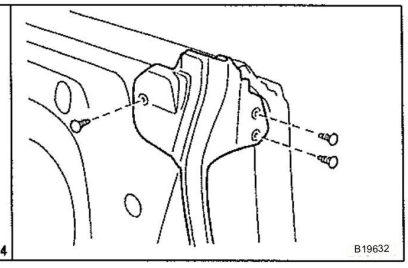

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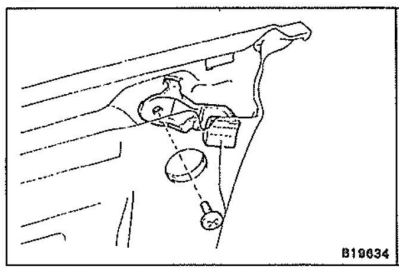

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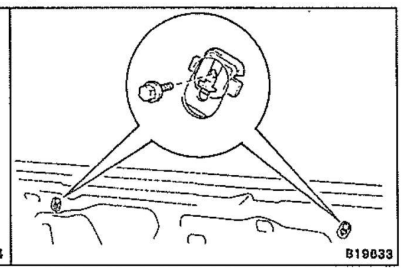

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Points to note during assembly work

Notes on the front RH door

注意 · When performing work that is expected to change the fully closed position of the front RH door glass, be sure to perform "9 Detection Switch Adjustment (Front RH Door)".

· Operation of the front RH power window is performed by connecting the vehicle wiring harness and power window master switch. · After adjusting the detection switch, the power window pinch prevention function Perform inspection.

(See "Power window" - "Functional inspection")

〈参考〉 Work that requires detection switch adjustment (front RH door) Door glass removal and adjustment

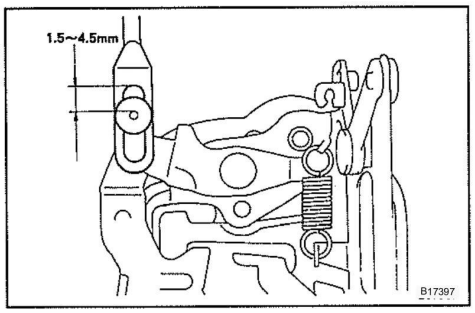
Door installation

adjustment Roof side weather strip removal

Roof drip molding molding removal

1 Body grease application

(1) Apply body grease to each sliding part of the window regulator and door lock.



2 Front door lock ASSY installation

(1) Install the bolts.

(2) Using Torx socket wrench T30, tighten the three screws.

Install the ALOCK ASSY. (3)

Check that there is downward play (1.5~4.5mm) in the door open rod.

confirm.

3 Installing the power window regulator

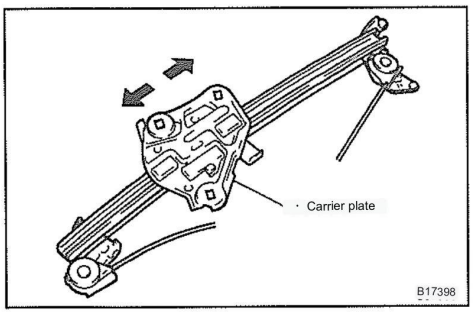
(When replacing power window regulator)

Caution • Holding tool included with new regulator Do not remove until you are about to install it. Be

• careful when handling the drum, as the drum and cable may become disconnected. Do not kick or apply shock or force to the product.

- If the drum and cable come off, do not reuse them.

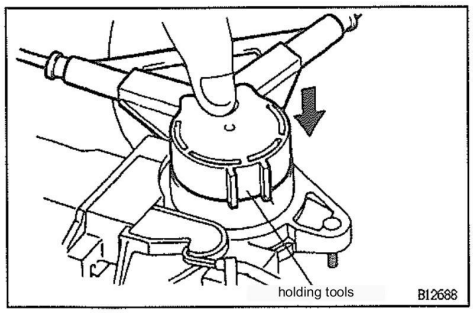
· After installing the window regulator, do not operate it alone.



(1) Move the carrier plate (the plate on which the glass is attached), Align the drum and motor drive shaft. (2) Apply body grease inside the motor housing.

(3) Remove the clamp from the holding tool.

(4) With the holding tool installed, remove the motor housing. and the holding tool.



(5) Push down the wire guide and drum and insert the drum into the motor housing.

注意 If the drum cannot be inserted into the motor, slowly slide the carrier plate (glass attachment part) and insert aligning the drum and motor drive shafts.

(6) Apply body grease to the side of the drum. (7) Attach the cover plate with two screws.

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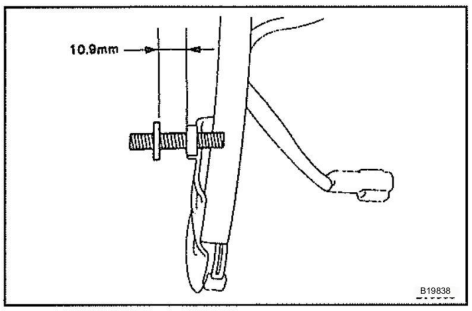

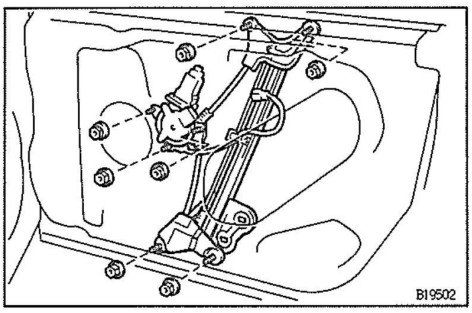

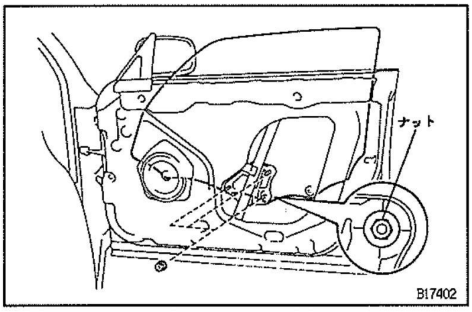

4 Power Window Regulator ASSY Installation <Reference> If

horizontal adjustment of the top edge of the glass is required, adjust the initial set to the

dimensions shown in the diagram using a two-sided 4m wide hexagon wrench.

(1) Set the window regulator ASSY inside the door panel.

Ru.

(2) Attach the three motor mounting nuts.

(3) Connect the connector and clamp it to the door panel.

(4) Install the nut.

5 Front door glass installation

(1) Insert the front door glass into the

door panel while inserting

it into the mirror bracket and stabilizer.

Do not cause any damage.

(2) Temporarily attach the front door glass to the regulator carrier plate.

I will listen.

Note When moving the carrier plate, use the upper stopper.

Since there is no holder, it cannot be moved to the upper position again.

(3) Attach the door glass using 3 nuts.

注意 Place the glass mounting nut in the center of the plate hole.

Hold the lath and tighten the nut.

(4) Temporarily attach the front door upper stop at the top.

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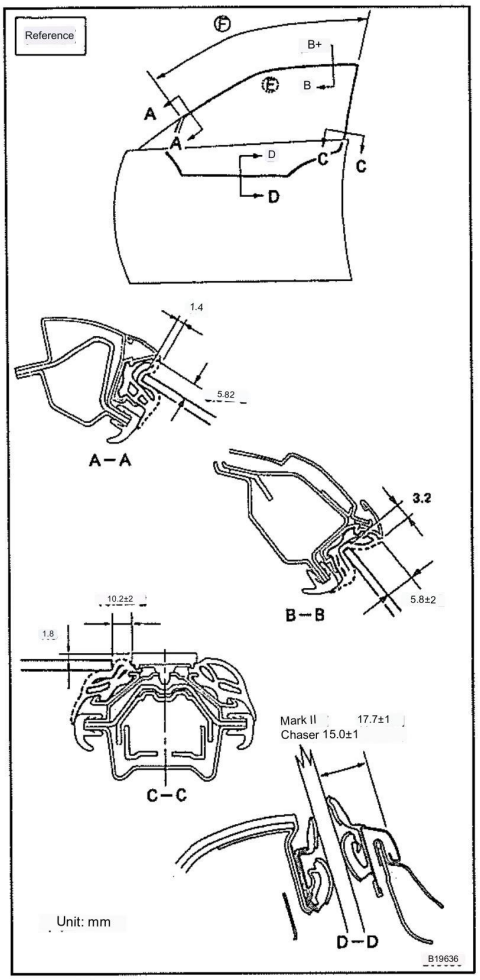


6 Inspect the front door glass

(1) When the door is closed and the glass is fully opened, and when the door is closed with the glass fully closed, check that the glass is in the states A-A, B-B, and C-C in the diagram.

(2) With the glass fully closed (door closed), check that the rear of the glass is in the position D-D in the diagram.

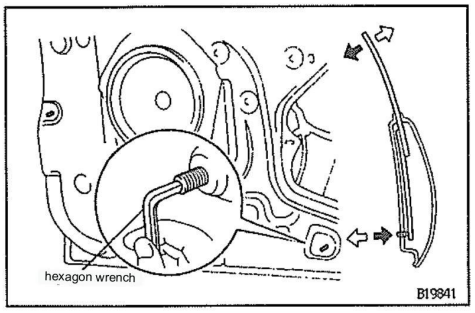
(3) With the glass fully closed (door closed), check that the center pillar and glass partition are parallel. (4) With the glass fully closed (door closed), lift the glass part from the indoor side with a load of approximately 20 kg.

When pressed, the glass should stop at the side weather strip and Check that it does not.

(5) When closing the door with the glass fully closed, check that the weather strip does not get caught and that the edge of the glass in between is covered with the weather strip.

(6) With the door closed, check that the glass moves up and down smoothly across the entire area.

(7) When the glass is raised, check that the glass and roof side rails are parallel and that the front and rear upstops are in contact at the same time.



7 Front door glass installation adjustment

(1) Adjust the top edge of the glass horizontally.

① Loosen the two lower nuts of the window regulator ASSY.

Ru.

② Use a 4mm hexagonal wrench to tighten the stud bolts.

Turn to adjust the top edge of the glass horizontally.

<Reference> When the stud bolt is loosened, the top edge of the glass moves toward the indoor side; when the stud bolt is tightened, the top edge of the glass moves toward the outdoor side.

③ Tighten the two nuts. (2) Adjust the lower part of the glass horizontally.

① Loosen the two upper nuts of the window regulator ASSY.

Ru.

②Tighten the two nuts.

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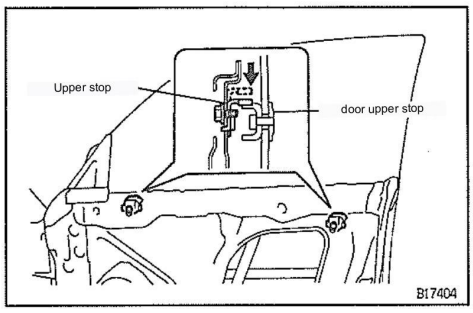

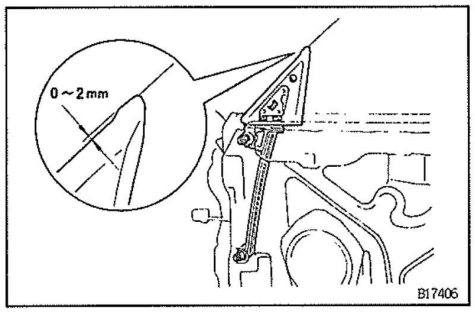

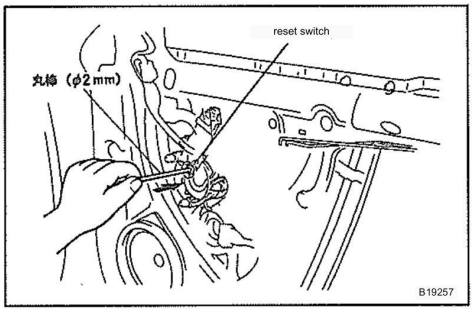

(3) Adjust the glass vertical direction (when fully closed) and front/rear tilt (when fully closed).

① Loosen the upper stop mounting bolt and temporarily tighten it at the upper end position.

② Loosen the three mounting nuts on the door glass.

③ Connect the multiplex network master switch and stop the glass about 3mm before the fully closed position.

④ While lifting the glass, tilt the glass vertically (when fully closed) and front and back so that the relationship with the body matches the dimensions shown on the previous page. (When fully closed) Adjust.

⑤ At the glass fully closed position, set the upper stop to the door upper stop. Press it lightly against the side and fully tighten.

(4) After glass adjustment, perform installation inspection.

8 Door mirror bracket installation inspection

(1) When the glass is fully closed, there is no gap in the lip of the door mirror bracket. Make sure it is in close contact. Standard:

The glass is 0 to 2 mm above the door mirror bracket. (2) If it does not meet the standards, remove the door mirror bracket mounting bolts and Loosen the nut and move the bracket to adjust.

9 Detection switch adjustment (front RH door)

(1) Connect the multiplex network master switch ASSY to the wire harness and turn on the ignition switch.

(2) Fully close the door glass.

注意 Perform manual operation.

(3)Use a 2mm round bar to press the reset switch. Caution: When using wire, etc., make sure there are no protrusions at the tip.

(4) While holding down the reset switch, turn off the drive using the master switch. Fully open Agulhas.

注意 · Perform manually.

· If rotational vibration is felt at the reset switch, the pressing force is insufficient, so repeat the process from step

(2). (5) Remove the reset switch round bar and fully close the door glass.

Note 备 Perform this manually.

(6) Check that the door glass can be fully opened and closed automatically. Ru.

(7) Check the function of the power window.

10 Installing the front door service hole cover

(1) Attach butyl tape to the body side.

(2) Attach a new service hole cover. Paste and

注意 paste the service hole cover so that no wrinkles appear. After attaching it, press it down enough to prevent it from lifting. (3) Apply tape to the exit of the wire harness.

(4) Paste the sponge on the underside of the door locking link and open link.

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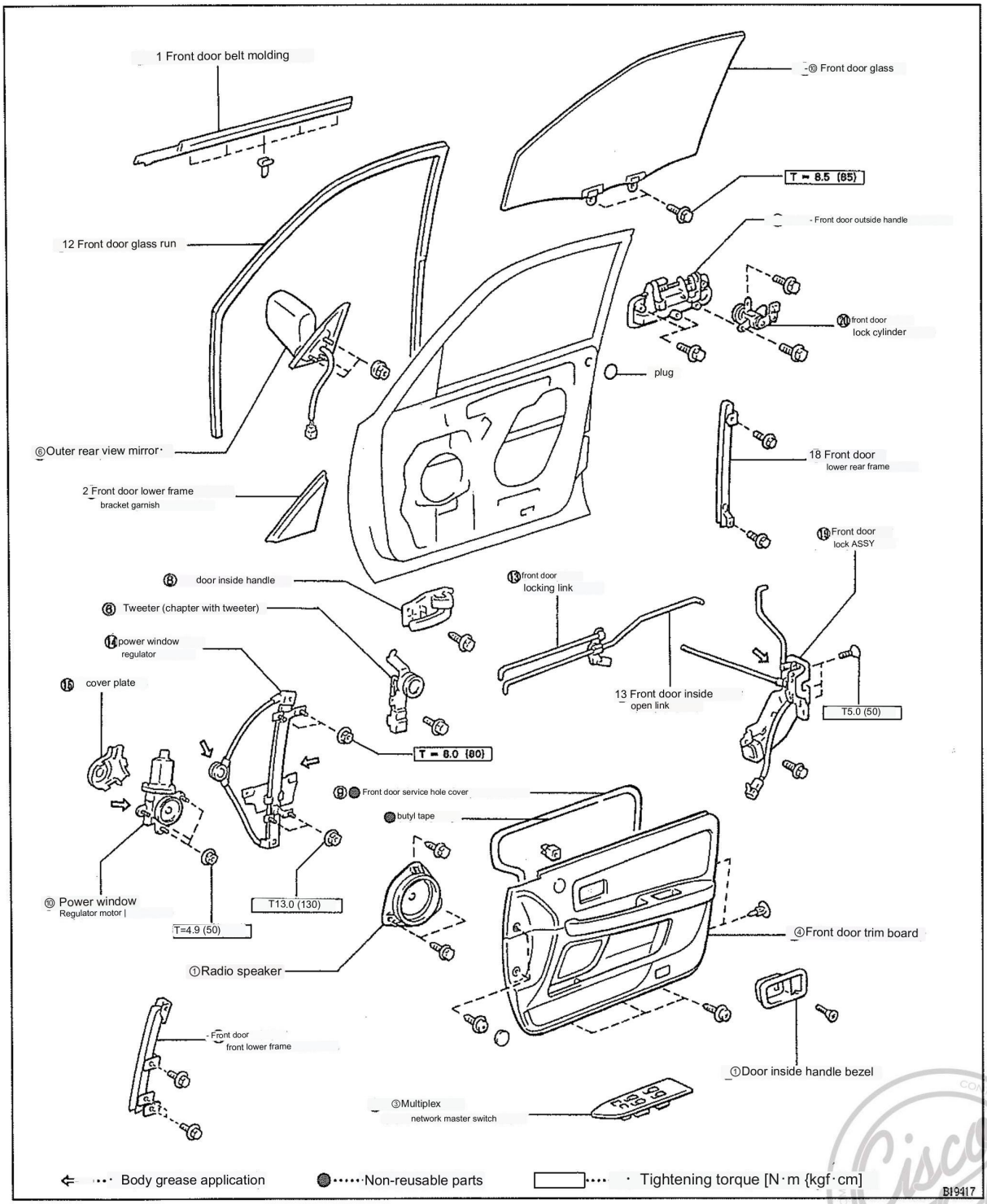
Cresta

Exploded configuration diagram

<Reference> The numbers given to the part names are examples of installation/removal procedures.



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front door disassembly

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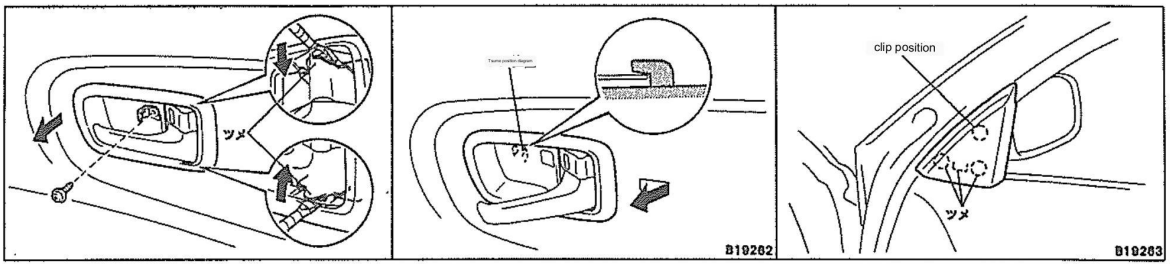

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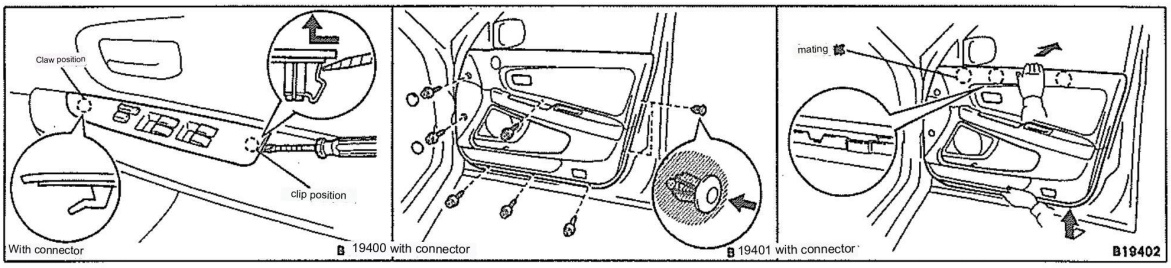

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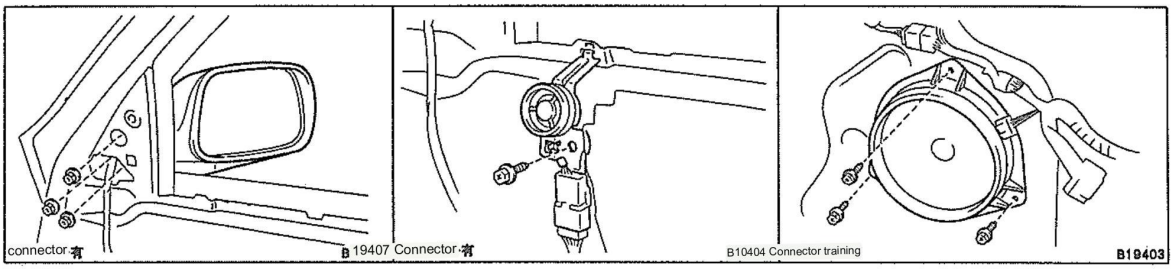

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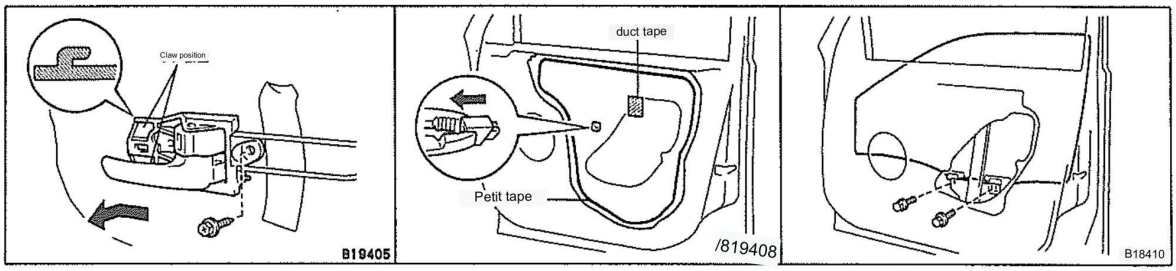

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[salutation]

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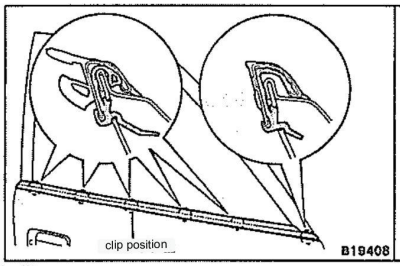
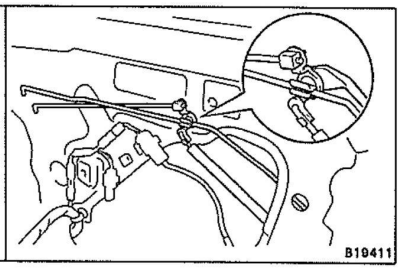


⑫

Front door glass run removal

⑬



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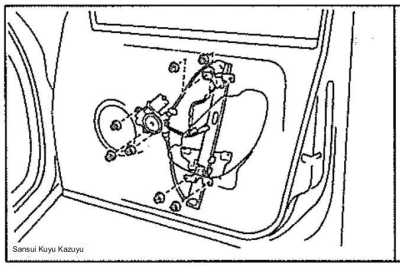
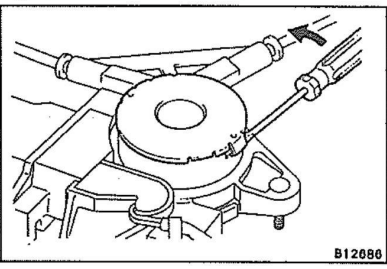
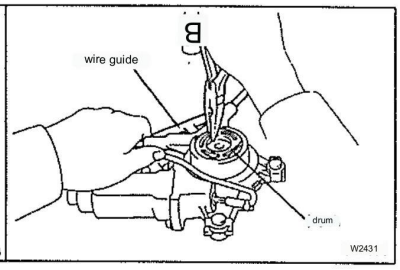


⑤ (When exchanging VfV-Yu-)



⑩ (When replacing V+2V-Yuichi)



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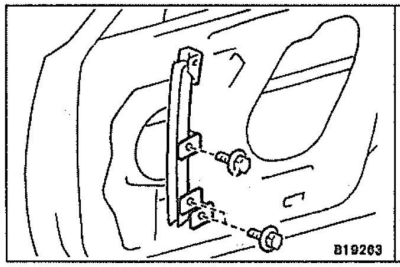

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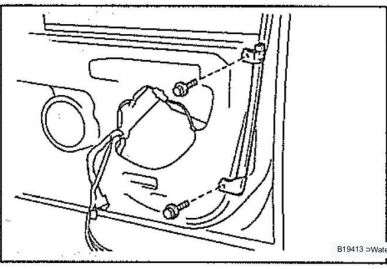

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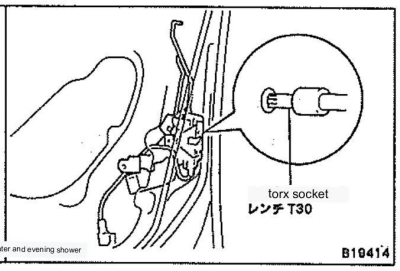

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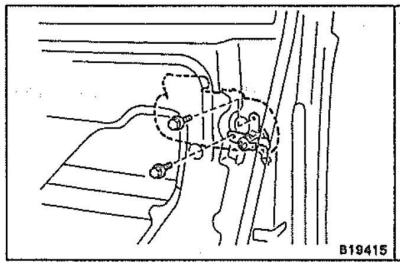

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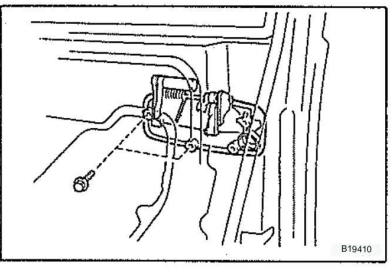

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Points to note during assembly work

Notes on the front RH door

Mandatory caution

- When performing work that is expected to change the fully closed position of the front RH door glass, be sure to perform "6 Detection Switch Adjustment (Front RH Door)".
- Operation of the front RH power window is performed by connecting the vehicle wiring harness and power window master switch.
- After adjusting the detection switch, check the power window pinch prevention function.

Perform inspection.

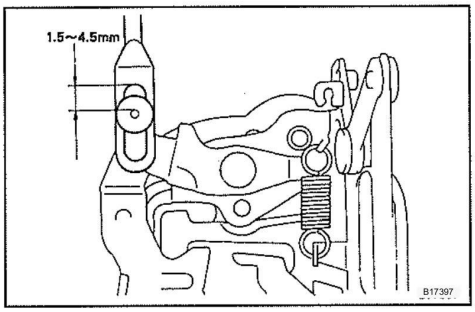
(Refer to "Power window" - "Functional inspection")

<Reference> Work that requires detection switch adjustment (front RH door)

Door glass removal

1 Body grease application

(1) Apply body grease to each sliding part of the window regulator and door lock.

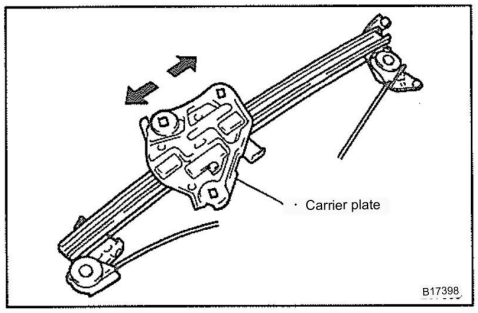


2 Front door lock ASSY installation

(1) Install the bolts.

(2) Using Torx socket wrench T30, install the door lock ASSY with 3 screws.

(3) Check that there is downward play (1.5~4.5mm) in the door open rod. confirm.



3 Installing the power window regulator (when replacing the power window regulator)

Do not remove the holding tool that comes with a new regulator until you are about to install it. Do not put

- the drum in your pocket as the drum and cable may come off.

Do not kick or apply shock or force.

- If the drum and cable come off, do not reuse them.
- After installing the window regulator, do not operate it alone.

(1) Move the carrier plate (the plate on which the glass is attached) and Align the drum and motor drive shaft.

(2) Apply body grease inside the motor housing.

(3) Remove the clamp from the holding tool.

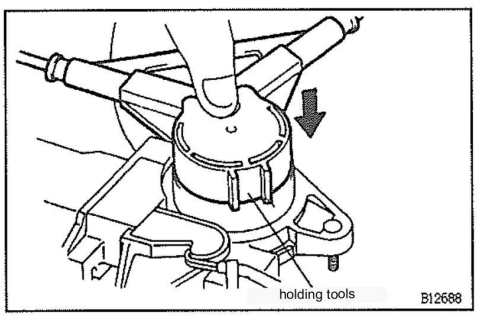
(4) With the holding tool installed, remove the motor housing. and the holding tool.

(5) Push down the wire guide and drum and insert the drum into the motor housing.

Be careful If the drum cannot be inserted into the motor, gently slide the carrier plate (glass mount) to separate the drum Align the drive shaft of the motor and insert it.

(6) Apply body grease to the side of the drum.

(7) Attach the cover plate by caulking it.



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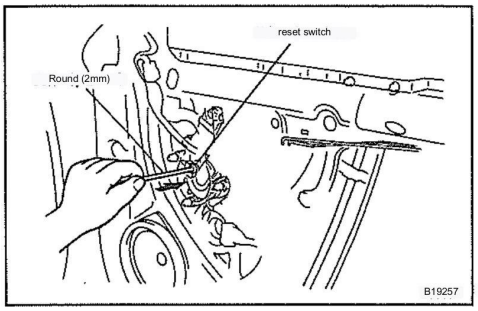

4 Detection switch adjustment (front RH door)

(1) Connect the power window master switch to the wire harness, Turn on the ignition switch. (2) Fully close the door glass.

注意 Perform manual operation.

(3)Use a 2mm round bar to press the reset switch. Caution: When using wire, etc., make sure there are no protrusions at the tip.

(4) While holding down the reset switch, use the master switch to fully open the door glass.

[Note] Perform manually.

· If rotational vibration is felt at the reset switch, press Due to lack of strength, I restarted from step (2).

(5) Remove the reset switch round bar and fully close the door glass.

Caution Perform manual operation.

(6) Check that the door glass can be fully opened and closed automatically.

(7) Check the function of the power window.

5 Front door service hole cover installation

(1) Attach butyl tape to the body side. (2) Attach a new service hole cover.

注意 Paste and paste the service hole cover so that no wrinkles appear. After attaching it, press it down enough to prevent it from lifting. (3) Apply tape to the exit of the wire harness.

(Four) Sponge on the underside of the door locking link and opening link Paste.

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Congratulations times

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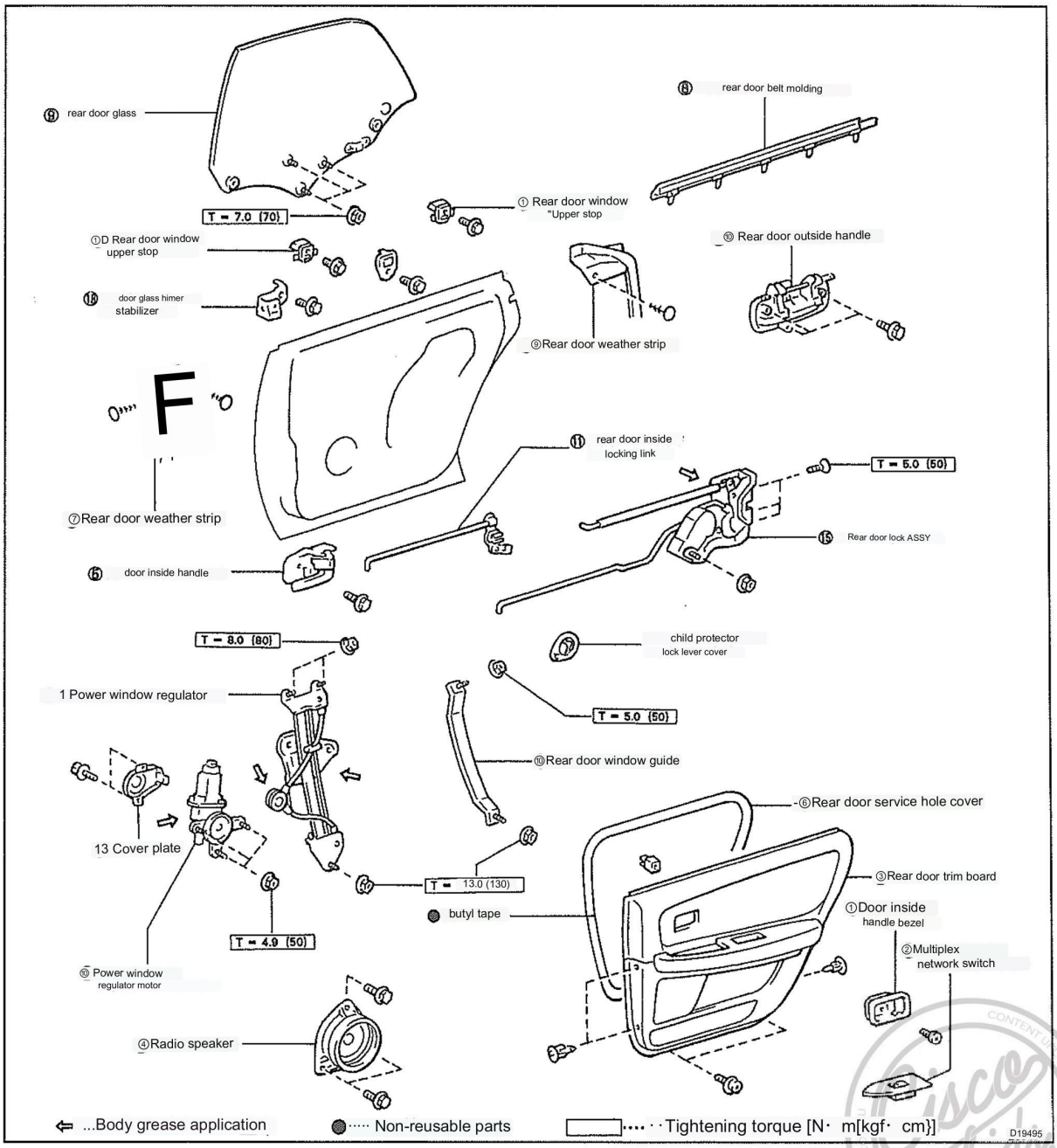
rear door

Mark II Chaser

Exploded configuration diagram

(reference) The numbers given to the part names are examples of installation and removal procedures.



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Rear door disassembly

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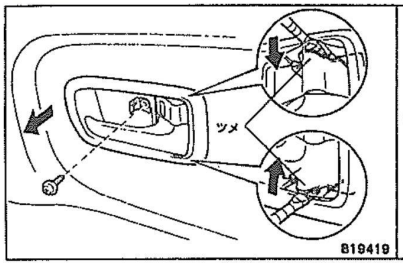

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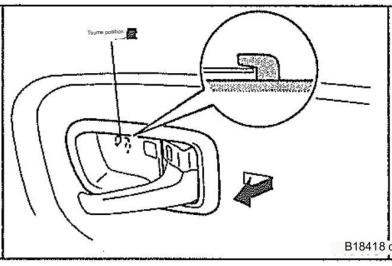

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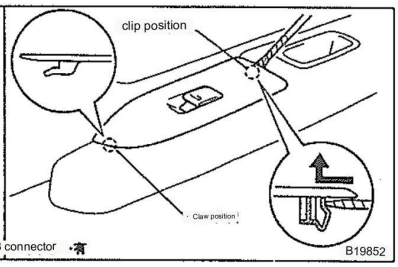

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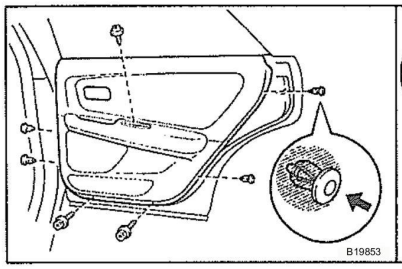

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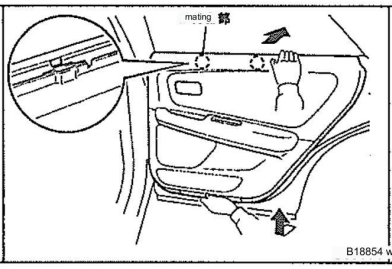

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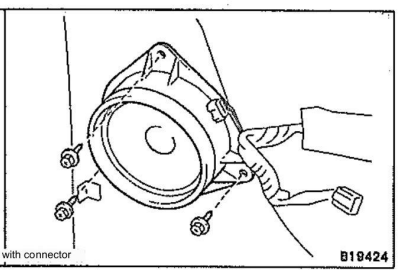

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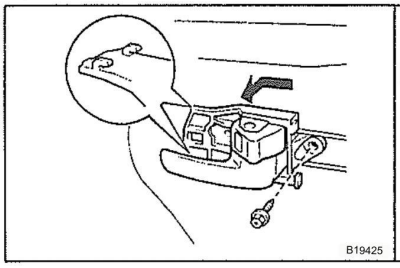

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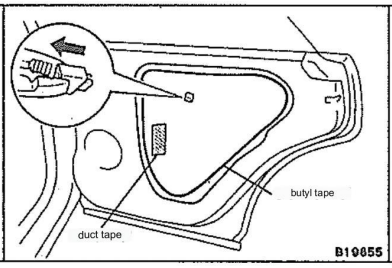

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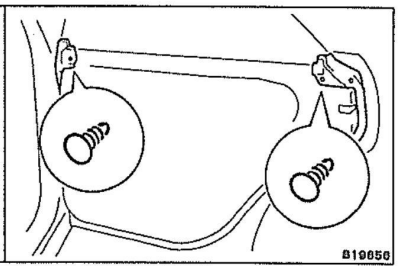

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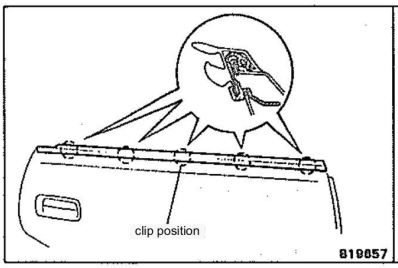

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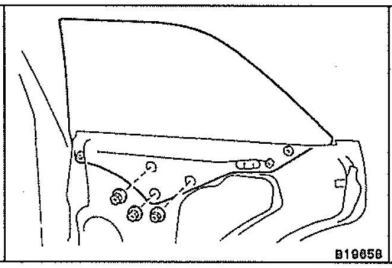

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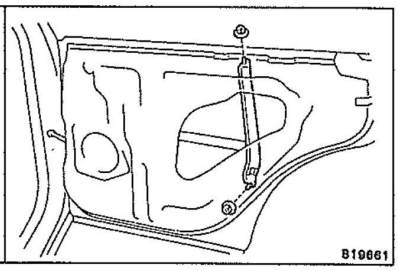

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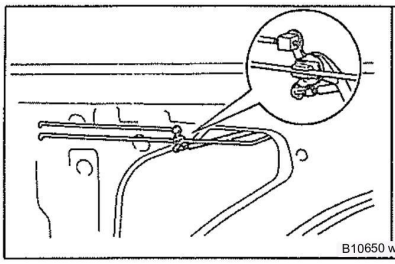

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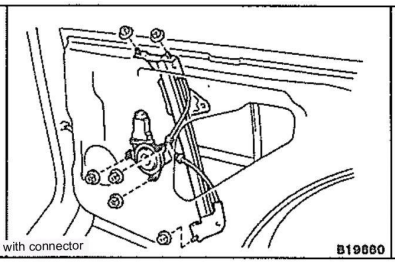
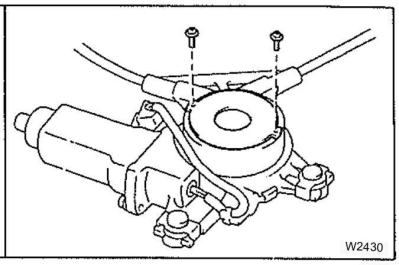


13 (when replacing regulator)



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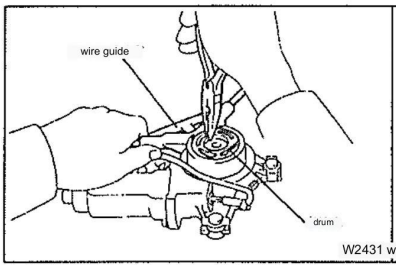

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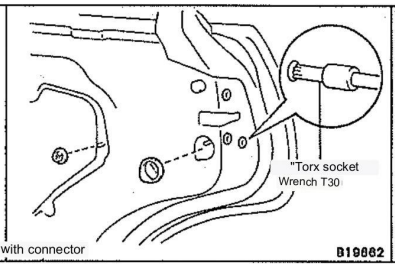

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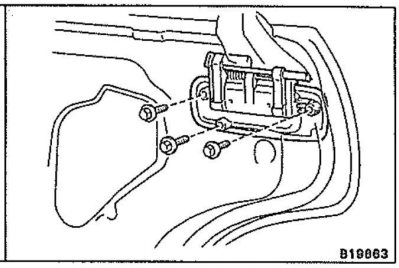

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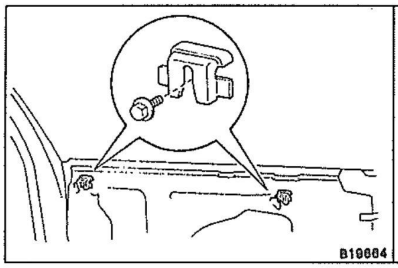

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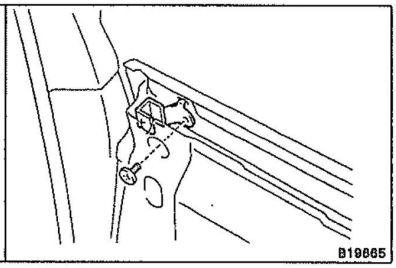

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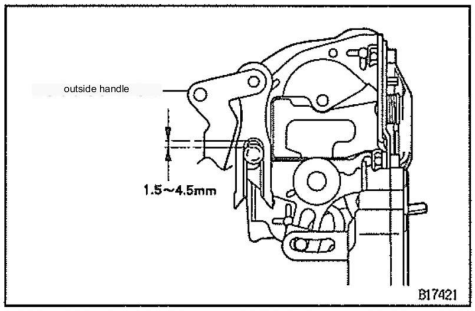

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Points to note during assembly work

1 Applying body grease (1) Apply body grease to each sliding part of the window regulator and door lock.

2 Rear door lock ASSY installation

(1) Using Torx socket wrench T30, tighten the three screws.

Install the ALOCK ASSY. (2)

Check that there is downward play (1.5~4.5mm) in the door open rod.

confirm.

3 Installing the power window regulator

(When replacing the power window regulator)

(Refer to Front & Rear Door" - "Points to note when assembling the front door")

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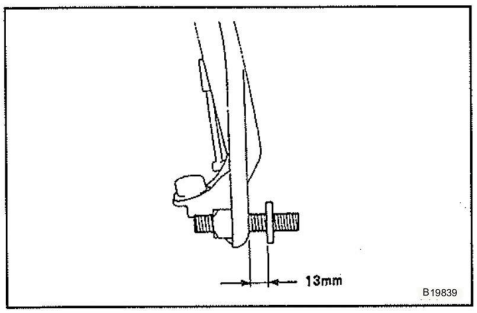
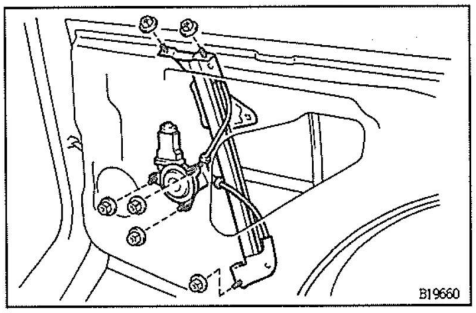


4 Power window regulator ASSY installation

<reference> If horizontal adjustment of the top edge of the glass is required, the initial set is made on two sides.

Use a 4mm wide hexagon wrench to adjust the dimensions as shown.



(1) Set the window regulator ASSY inside the door panel.

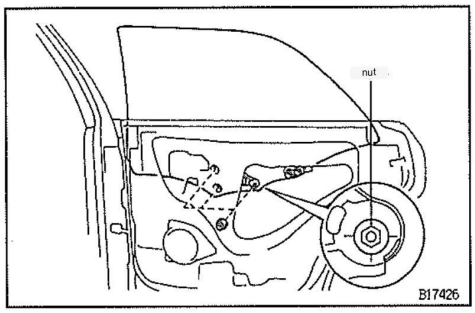
Ru.

(2) Attach the three motor mounting nuts.

(3) Attach the two nuts.

(4) Connect the connector and clamp it to the door panel.

(5) Attach one nut.



5 Rear door glass installation

(1) Insert the rear door glass into the door panel.

Note Grease the weather strip part of the door belt molding.

Do not cause any damage.

(2) Temporarily place the rear door glass on the regulator carrier plate.

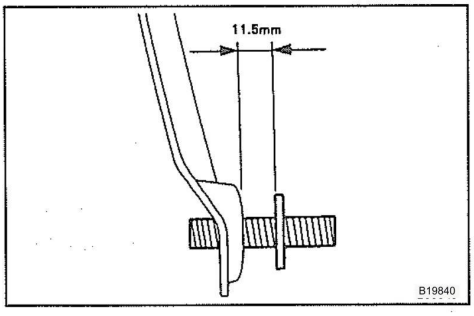
[Caution] When moving the carrier plate, do not move it to the top position as there is no upper stopper.

(3) Attach the door glass using 3 nuts.

Note Align the glass mounting nut with the glass in the center of the plate hole.

Hold the lath and tighten the nut.

(4) Temporarily attach the rear door upper stop at the top.



6 Rear door window guide installation

(**) If horizontal adjustment of the top edge of the glass is required, adjust the initial set to the dimensions shown in the diagram using a two-sided 4mm wide hexagon wrench.

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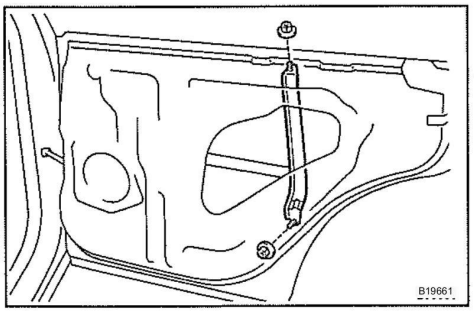

(1) Connect the rear door power window regulator switch,

Move the door glass to the half-open position. (2) Set the window guide inside the door panel.

(3) Attach the two nuts.

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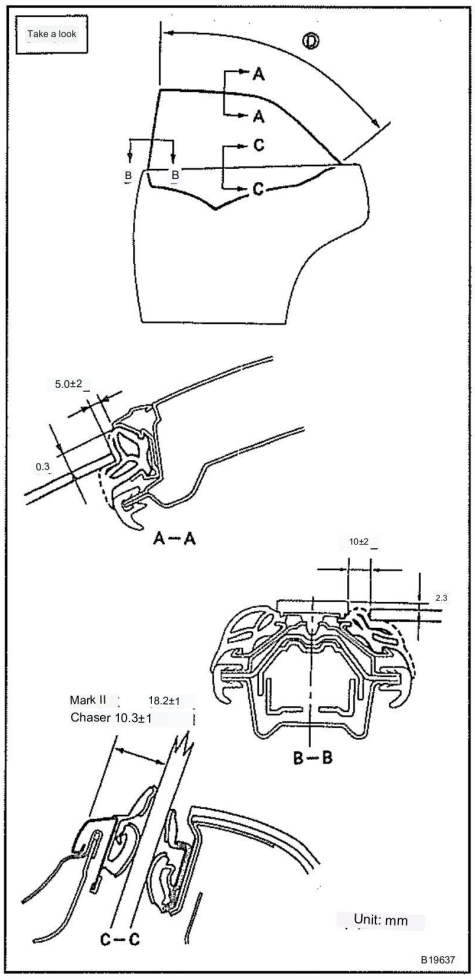


7 Rear door glass wall inspection

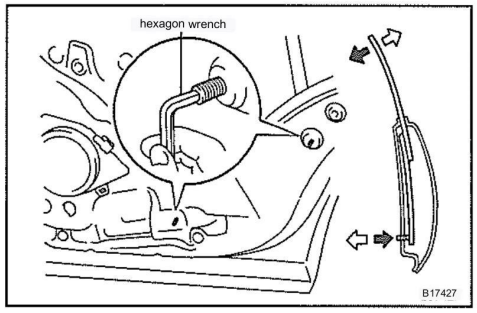
(1) When the door is closed and the glass is fully closed, or when the door is closed with the glass fully closed, the glass may be in the states A-A and B-B in the diagram. and check.

(2) When the glass is fully closed (door closed), the side of the glass is in the state shown in C-C in the diagram. Check what happens.

(3) With the glass fully closed (door closed), check that the center pillar and glass partition are parallel. (4) When the door is closed with the glass fully closed, the weather strip The edge of the glass in between is covered with a weather strip. Check that the

(5) With the door closed, check that the glass moves up and down smoothly across the entire area.

(6) When the glass is raised, check that the glass and roof side rails are parallel and that the front and rear upper stops are in contact at the same time.



8 Rear door glass attachment adjustment

(1) Adjust the top edge of the glass horizontally.

① Loosen the two nuts at the bottom of the window regulator ASSY and window guide.

② Use a 4mm width across flats hexagon wrench to turn the stud bolt to adjust the top edge of the glass in the horizontal direction.

<Reference> When the stud bolt is loosened, the top edge of the glass moves toward the indoor side; when the stud bolt is tightened, the top edge of the glass moves toward the outdoor side.

③Tighten the two nuts.

(2) Adjust the lower part of the glass horizontally.

① Tighten the two ② nuts on the window regulator Loosen the 3 upper nuts. ASSY and window guide.

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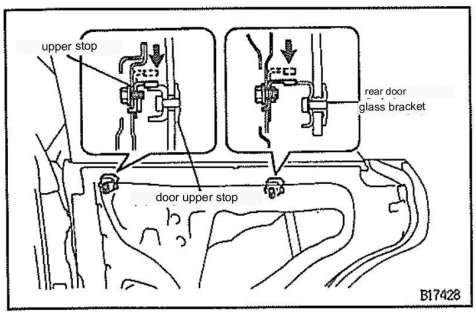

(3) Adjust the glass vertical direction (when fully closed) and longitudinal direction (when fully closed).

① Loosen the upper stop mounting bolt and temporarily secure it at the upper end position.

I'll try it.

② Loosen the 3 mounting nuts on the door glass.

③ Connect the rear door power window regulator switch and stop the glass approximately 3mm before the fully closed position.

④ While lifting the glass, tilt the glass vertically (when fully closed) and longitudinally so that the relationship with the body matches the dimensions shown on the previous page.

(When fully closed) Adjust.

⑤ At the glass fully closed position, set the upper stop to the door upper stop.

Then press it lightly against the door glass bracket side and fully tighten.

(4) After glass adjustment, perform installation

9 inspection. Rear door service hole cover installation

(1) Attach butyl tape to the body side.

(2) Attach a new service hole cover.

•Caution Attach the service hole cover so that no wrinkles appear. After attaching, press firmly to prevent it from lifting.

(3) Apply tape to the exit of the wire harness.

(4) Paste the sponge on the underside of the door locking link and open link.

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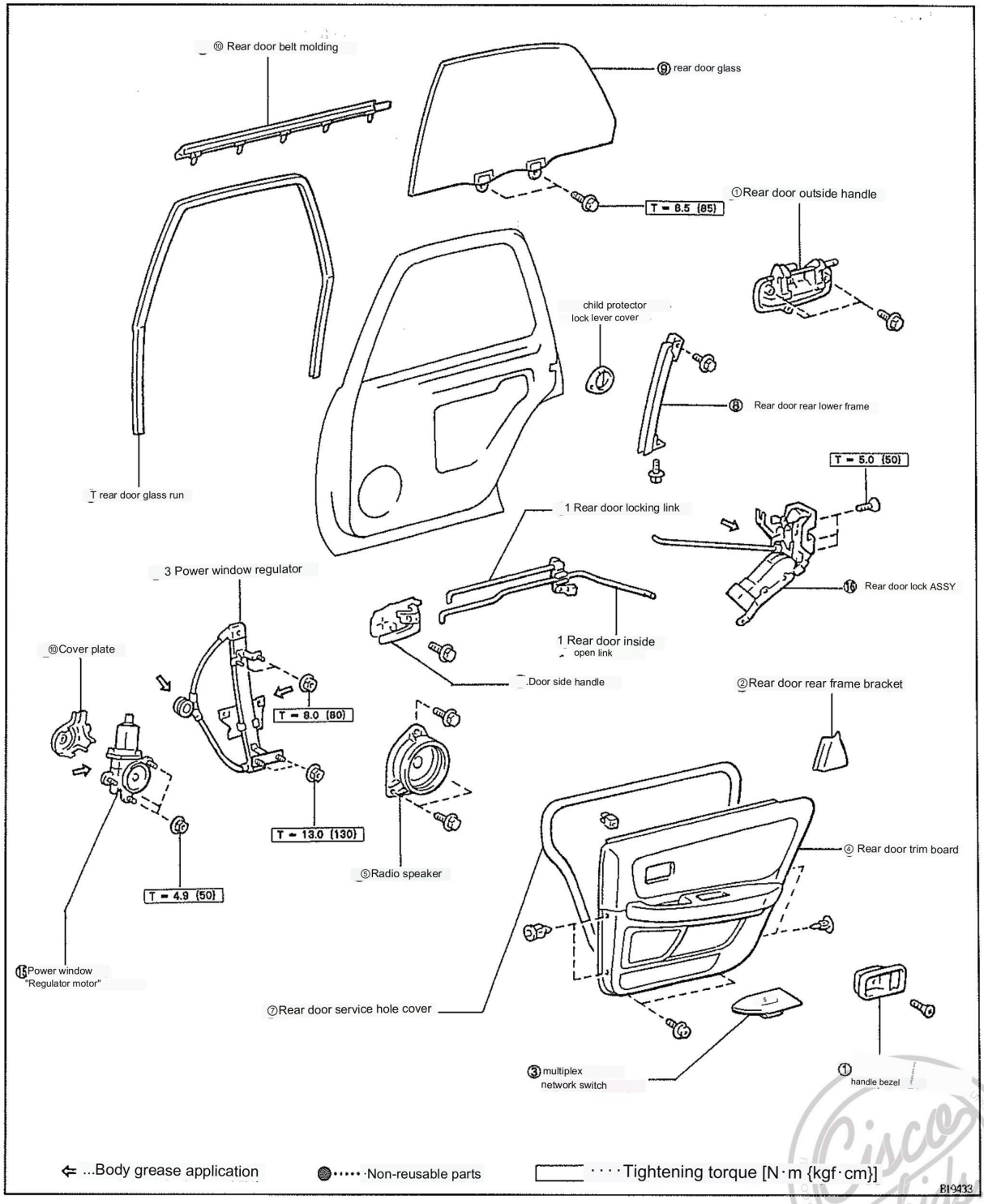
Cresta

exploded diagram

〈参考〉 The numbers given to the part names are examples of installation and removal procedures.



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steamed noodles
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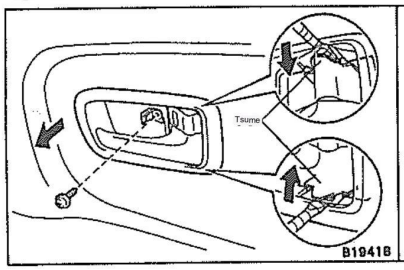
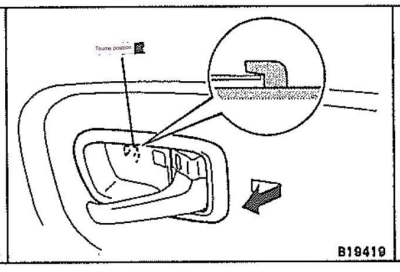
Rear door disassembly

0-1



1-2



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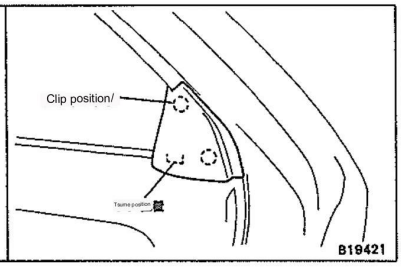

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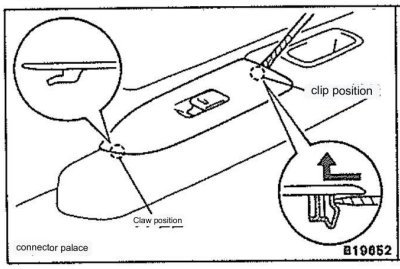

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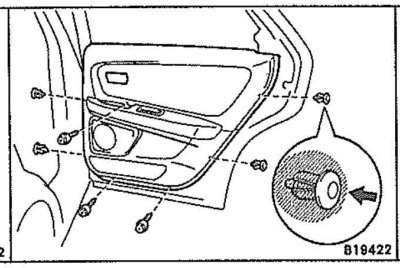

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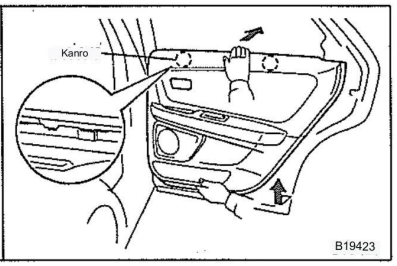

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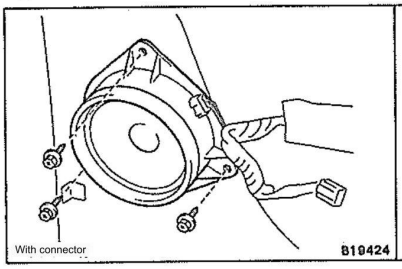

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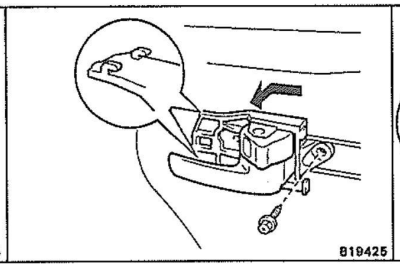

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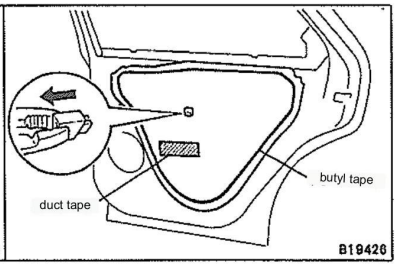

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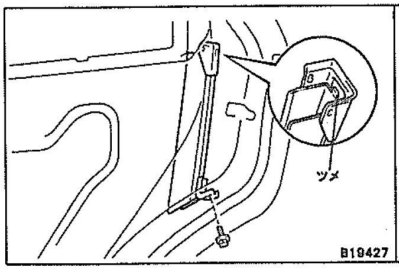

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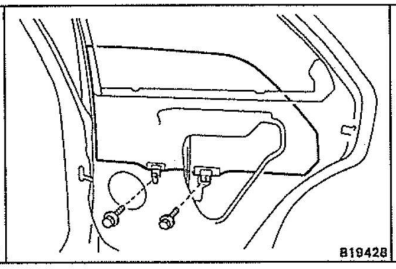

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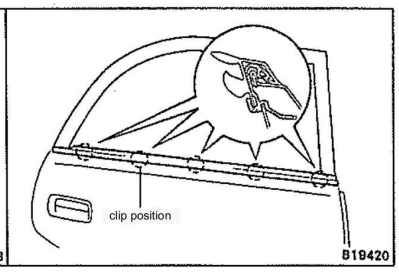

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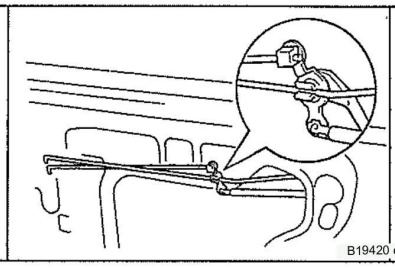
⑪ Rear door glass run removal

⑫



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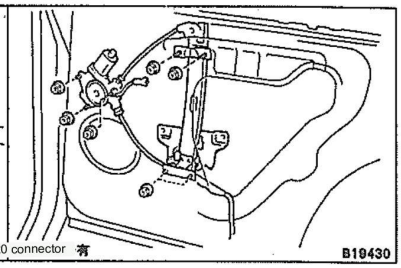
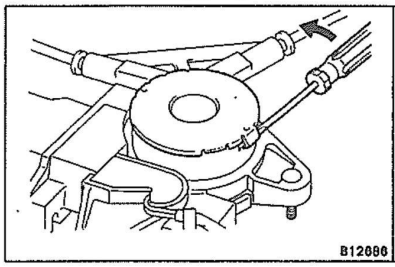
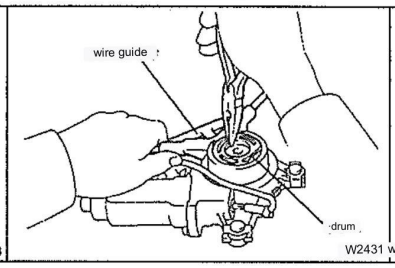


⑩ (When replacing regulator)



⑤ (When replacing regulator)



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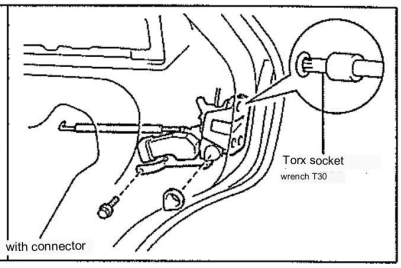

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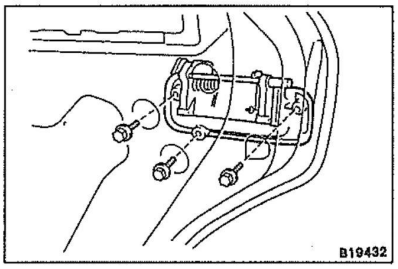

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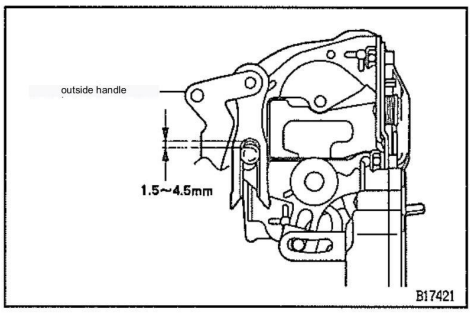

Points to note during assembly work

1 Applying body grease (1) Apply body grease to each sliding part of the window regulator and door lock.

2 Rear door lock ASSY installation

(1) Using Torx socket wrench T30, install the door lock ASSY with 3 screws.

(2) Check that there is downward play (1.5~4.5mm) in the door open rod.

3 Installing the power window regulator (When replacing the power window regulator)

(Refer to "Front & Rear Doors" - "Points to note when assembling the front door")

15

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TC049410

food support

Preparation items

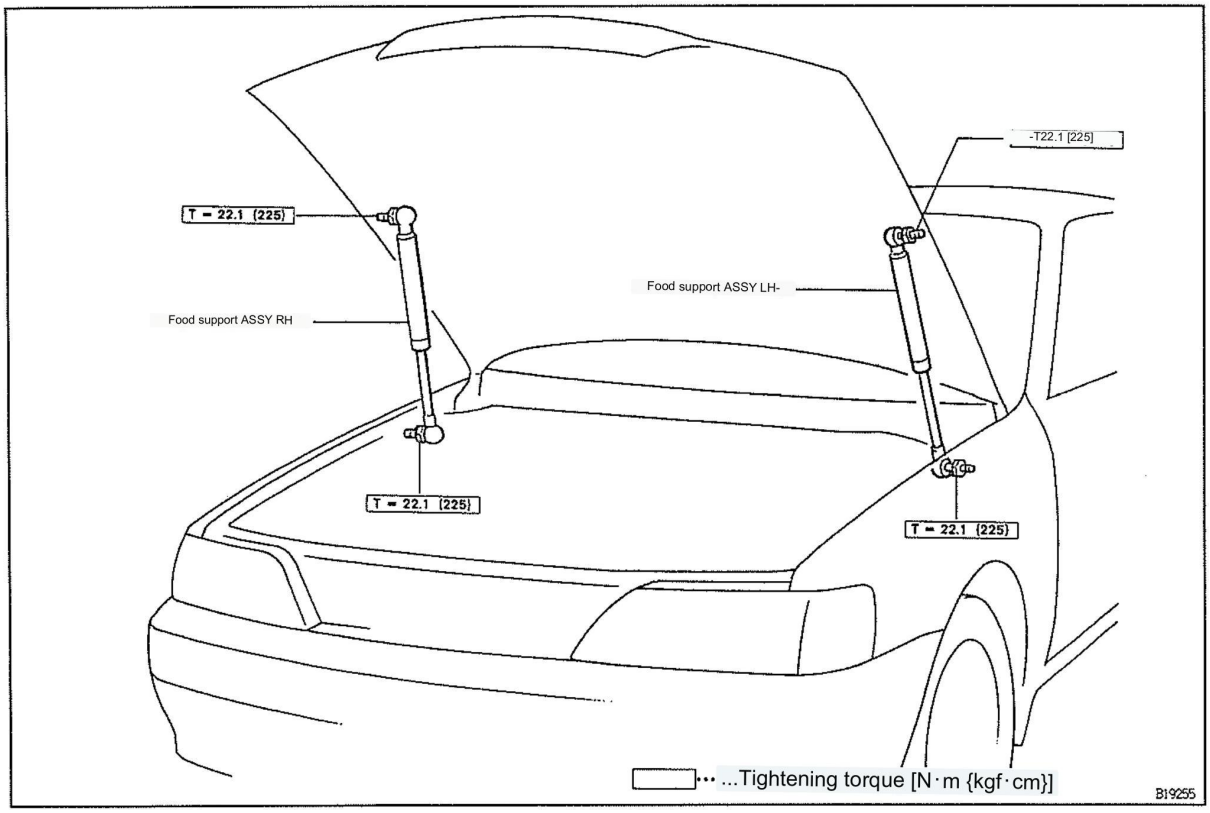
tool

hacksaw 50803	For support cutting

TC049410

food support

Configuration diagram



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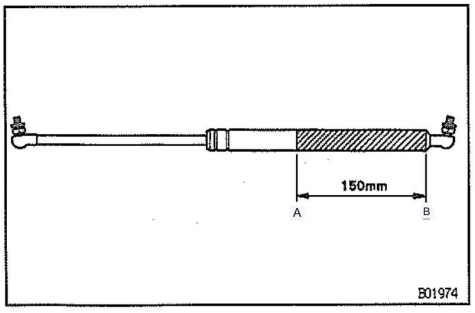

1 How to dispose of food support

(1) Fix the piston rod in the vice stand with it extended.

(2) Cut between A and B in the diagram with a hacksaw to release the gas.

The enclosed gas is colorless, odorless, and harmless, but the hacksaw's

Cover with a cloth to prevent chips from flying.

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T0049417

luggage door hinge

torsion bar

Preparation items

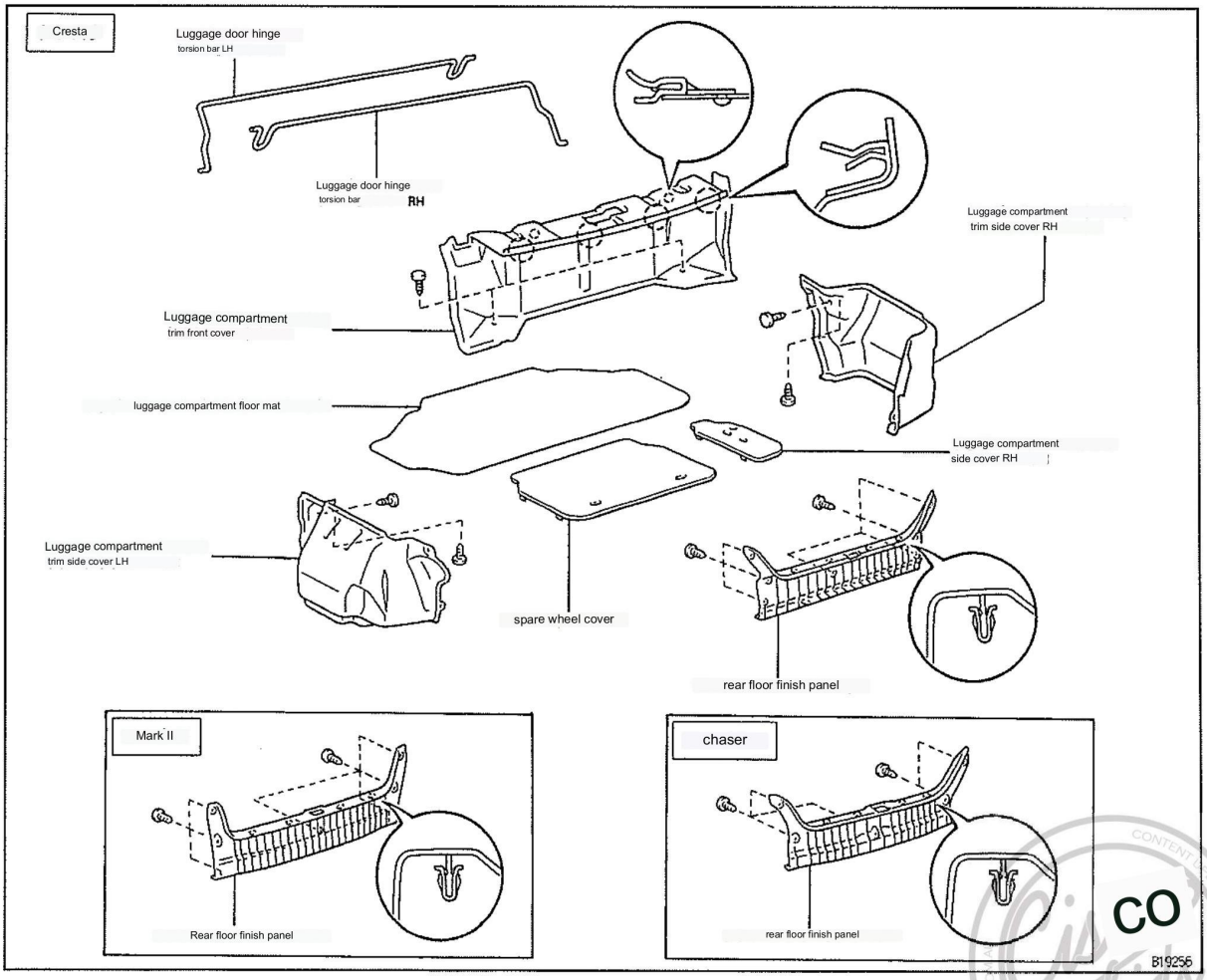
tool

clip remover	10801	For clip removal

T0348418

Luggage door hinge torsion bar

Detachment configuration diagram



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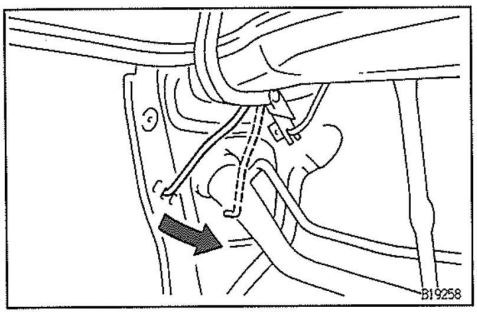
times house times

Removing the luggage door hinge torsion bar - When

注意 ‹the torsion bar is removed, the tension on the torsion bar will be released. The door will close with force, so hold the door when opening and closing it.

- Since the torsion bar does not have identification paint, paint it so that you can tell which is left and right when removing it.



1 Removing the luggage compartment floor mat

2 Removing the spare wheel cover

3 Removing the luggage compartment side cover

4 Removal of rear floor finish panel

5 Removing the luggage compartment trim front cover

6 Luggage compartment trim side cover RH and Removing the LH

(1) Remove the torsion bar from the clip in the center of the upper back panel.

Remove LH.

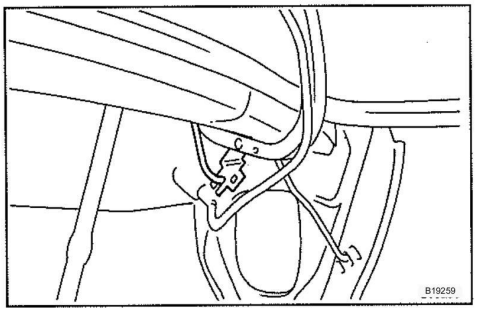
(2) Remove the tip of the torsion bar from the roof side inner by hand.

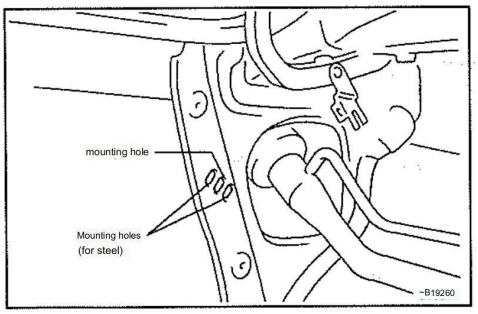
Remove.

(3) Remove the hinge arm from the torsion bar backwards. (4) Pull the torsion bar toward you and remove the U-shaped part from the hinge support.

Remove.

(5) Remove torsion bar RH according to steps (1) to (4).





Points to note during installation work

1 Installing the luggage door hinge torsion bar (1)

Attach the tip of the torsion bar to the mounting hole in the center. The upper and lower parts are mounting holes for adjustment.

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T0048419

Nameplate

Preparation items

Oils and fats Others

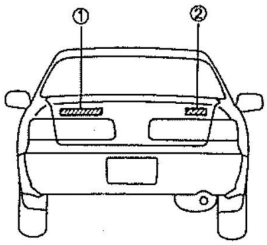
tape stripe remover	Sumitomo 3M Ltd. 51201	For name plate removal
white gasoline	 32701	For cleaning the name plate adhesive part

T0049420

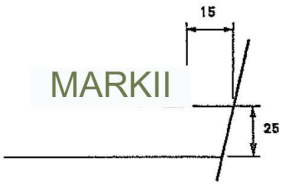
Name plate pasting

reference position

Mark II



② Car name mark



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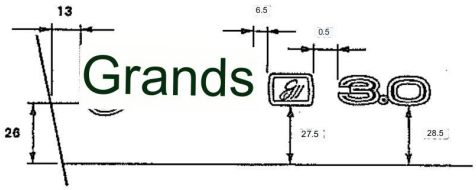

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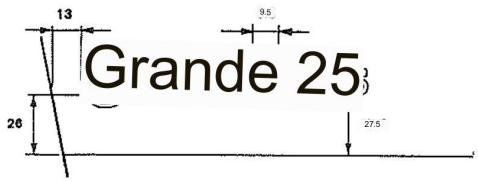
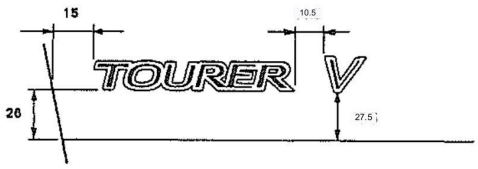


Grande



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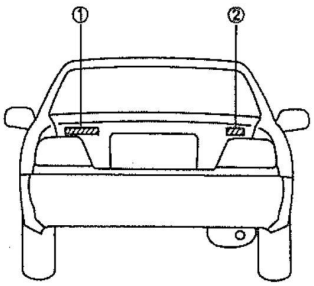
chaser



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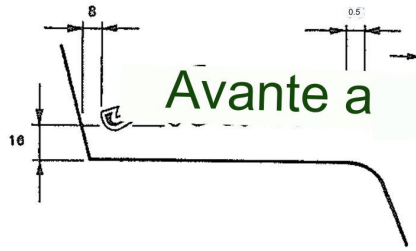

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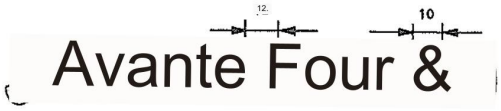

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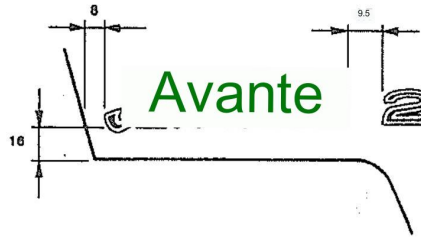

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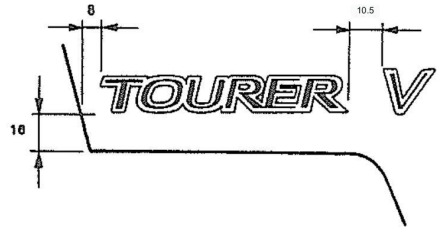

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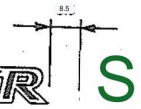

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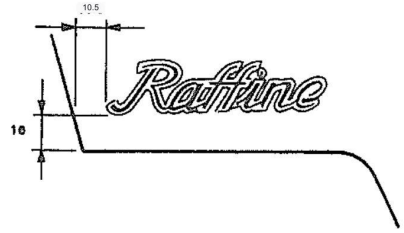

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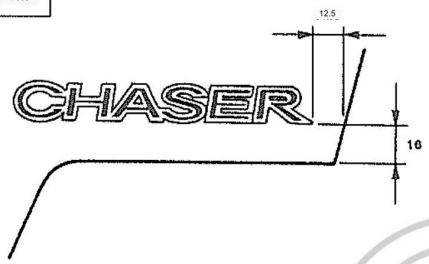

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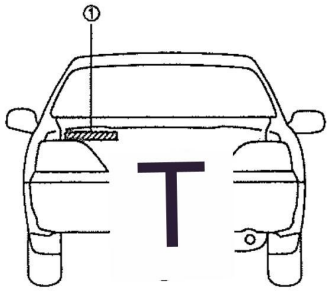
Cresta



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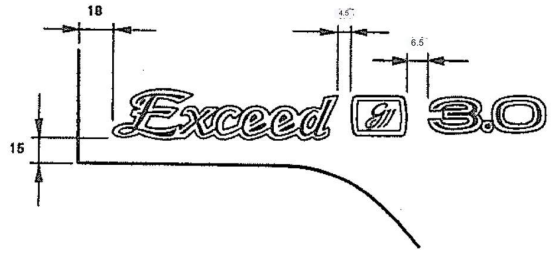

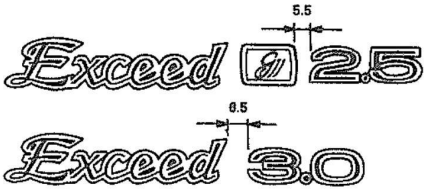

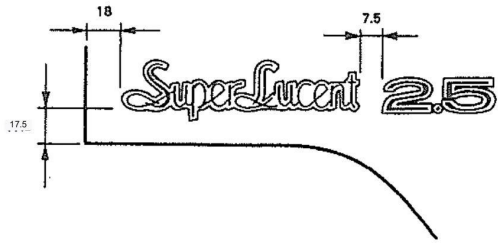

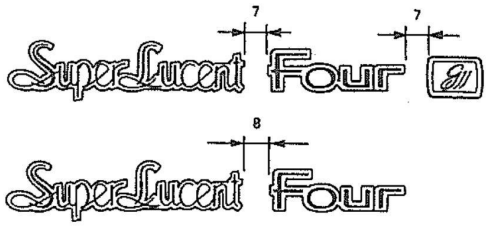

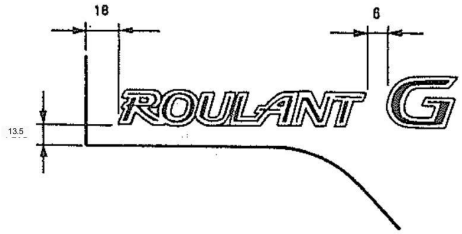

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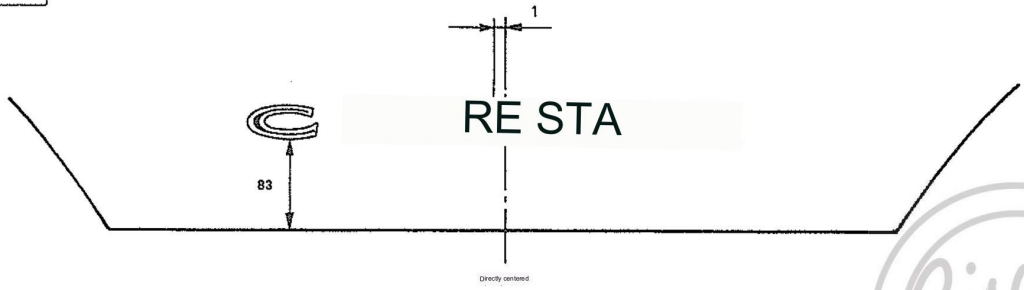

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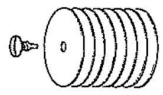
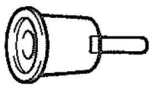
T0C40381

molding & garnish

Preparation items

tool

 OS030-00010	Table removable disk	Molding removal and removal
 (OK090-00030)	Holder	Molding removal and removal
Side molding removal tool set 10901		Molding removal/removal *
Plastic tape (50m roll) 11401		Molding removal and removal
Polybella (width 75mm) 11501		For cleaning molding and body mounting surfaces
S/K scraper 10701		Outside molding removal and installation
Remover Bond 7 (0.5L) 11602		Molding removal and removal
mighty blur 53901		For removing outside molding
Electric drill or air drill (09050-00032) 11213		For molding cleaning
roller 12201		For outside molding installation
bald 53402		For cleaning molding and body mounting surfaces
cutter knife 50601		For molding removal

Oils and fats Others

Acrylic foam tape (12mm x 1.2mm x 10m) 50301		For molding installation
White gasoline handled by Sueoka Shoten Co., Ltd. 32701		For cleaning each part
piano wire 52001		For removing outside molding
infrared lamp 53201		Molding removal and removal
protective tape 53501		For preventing scratches
safety glasses 55201		For moldings and body mounting surfaces

*···· Sueoka Shoten Co., Ltd. Automotive Repair Products Division 2-5-1 Gokisho, Showa-ku, Nagoya TEL (082-9266)

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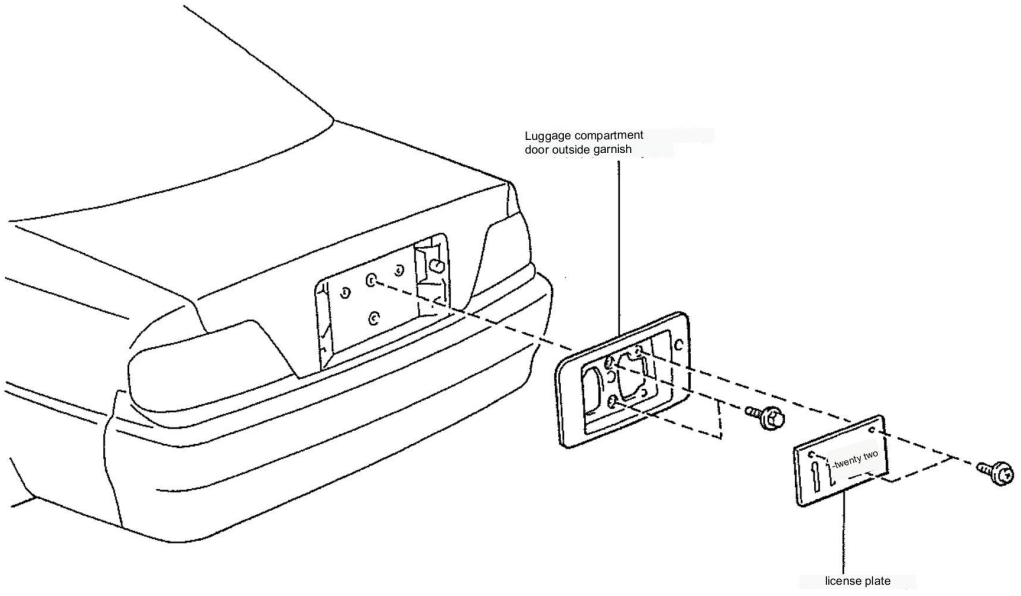
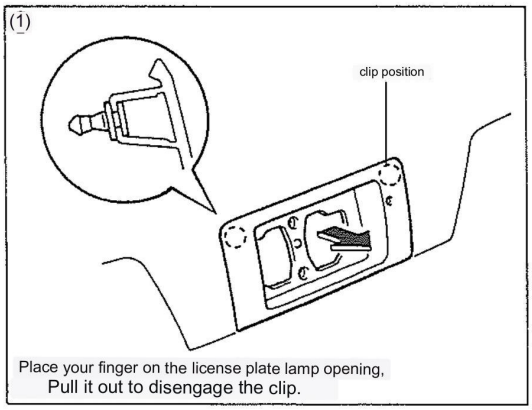
T0040382

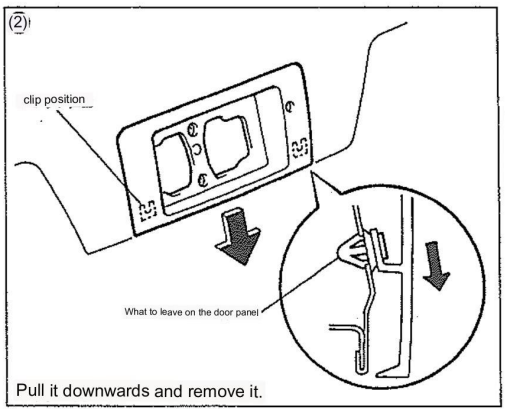
Luggage compartment door outside garnish

Detachment configuration diagram

chaser







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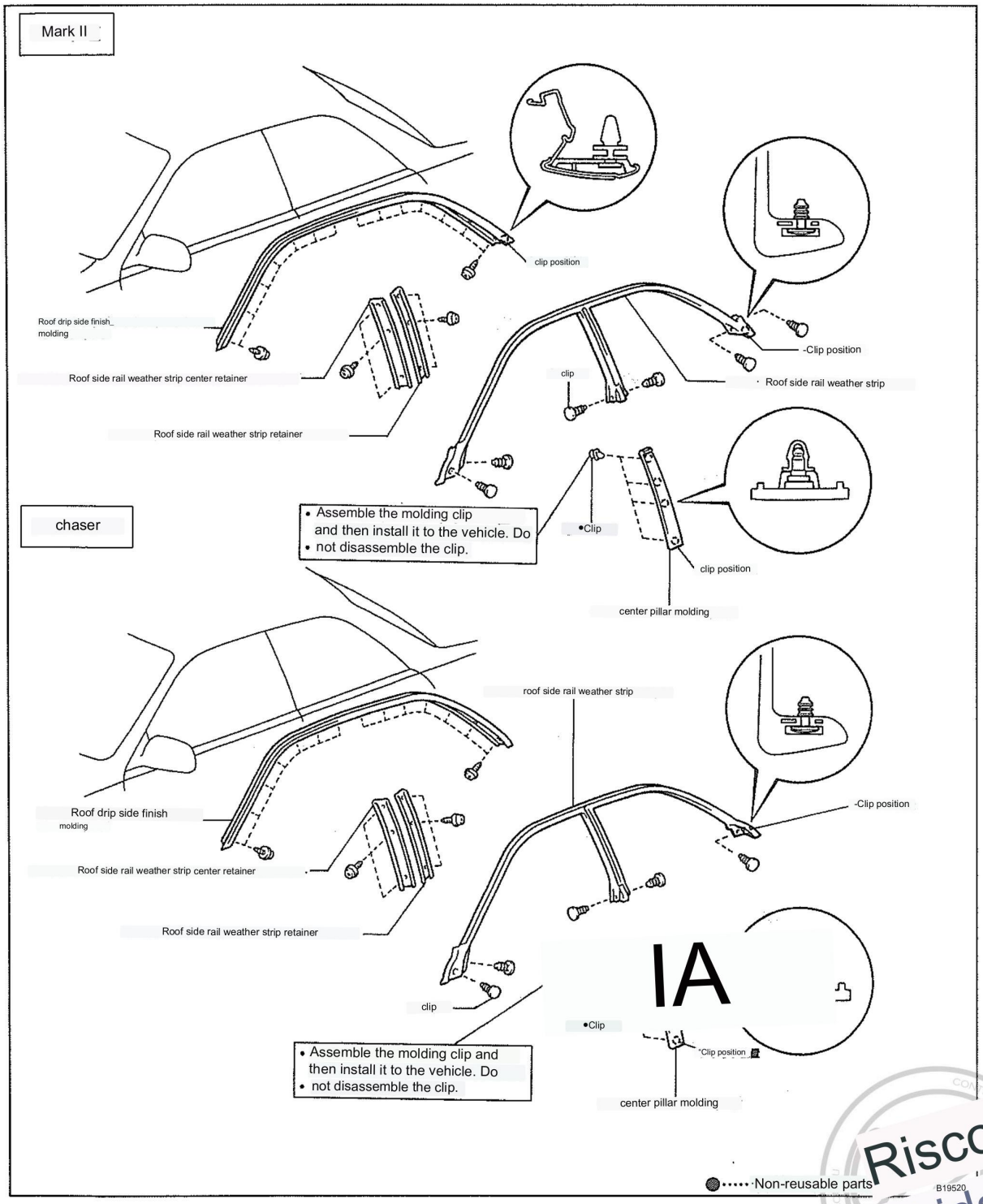
T0049384

Roof drip molding

Mark II Chaser

Detachment configuration diagram



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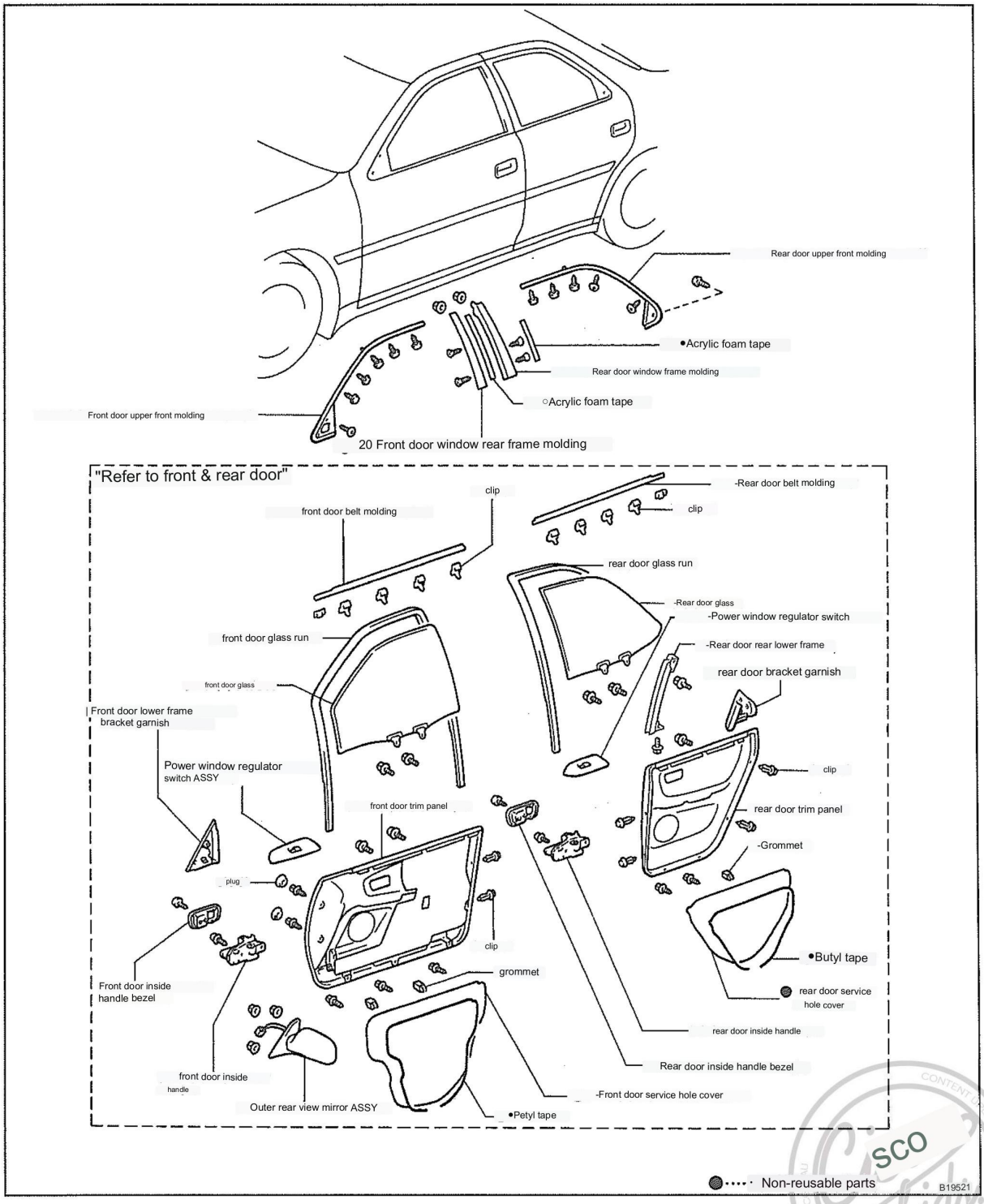
Door window frame molding

Cresta

De-masting configuration diagram



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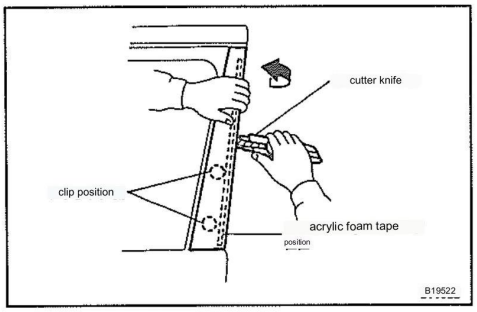
front door window frame molding

Related parts removal

· For information on removing front door window frame molding related parts, see "Front & Rear Door (Front Door Disassembly: ①~⑤, ⑧~12)"



front door window frame molding

Removal

1 Front door window rear frame molding removal

Sushi

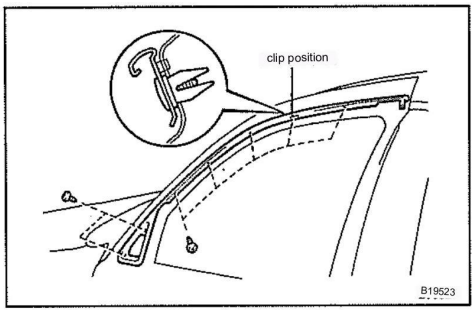
(1) Remove the two screws and nuts.

(2) Warm the molding with an infrared lamp, etc.

<Reference> 3-5 minutes at 40-60°

(3) Lift the molding by hand and use a cutter knife to separate the body and molding.

(4) Remove the clip engagement.



2 Removing the front door upper front molding

(1) Remove the 7 screws.

(2) Disengage the clip and remove the upper front molding.

front door window frame molding

attachment

1 Vehicle mounting surface cleaning

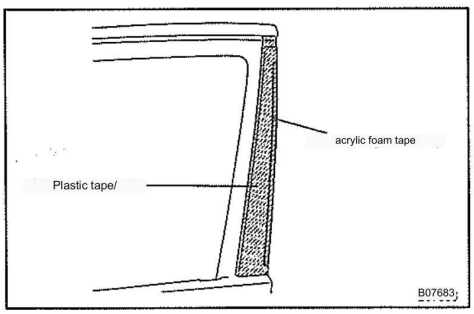
When using solvents

(1) Protect the remaining acrylic foam tape on the body.

Apply tape (plastic tape). <Katsu>

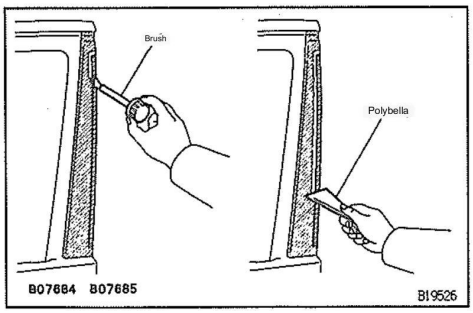
To protect the body, mask the area around the plastic tape.

It is a good idea to attach paper, etc.



(2) Put the required amount of Remover Bond 7 into a PP cup, and Use a brush to apply as thickly as possible to the remaining acrylic foam tape on the body.

Shake the can of Remover Bond 7 well before use.· If Remover Bond 7 adheres directly to the painted surface, there is a risk of staining the paint film, so wipe it off immediately.· If blistering occurs in the paint film, heat the defective area to 80°C using an infrared lamp, and repeat the process every 4 to 5 minutes by pressing down with a cloth soaked in thinner to allow the paint to penetrate.



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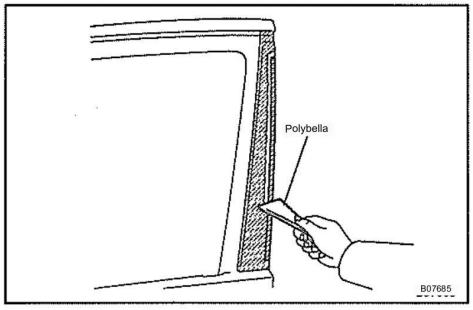

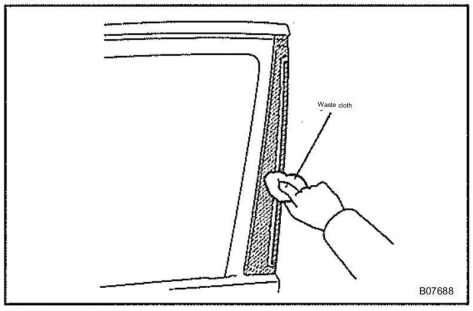

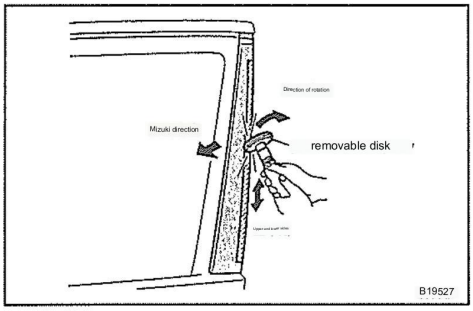

(3) Warm up the acrylic foam tape remaining on the body using an infrared lamp or similar device.

caution heat When heated until the surface is white and dry, acrylic foam is applied in the next step. The tape will be difficult to remove, so stop using it before then.

<Reference> 3-5 minutes at 40-60℃

(4) Scrape off the remaining acrylic foam tape on the body using a poly-scraper.

注意 Make the wall thickness of the acrylic foam tape sufficiently thin before starting the next process. Move to.

(5) Apply the remover bottle again to the acrylic foam tape remaining on the body. Apply compound 7. (6)

Remove remaining acrylic foam tape from the body using an infrared lamp etc. warm.

注意 Allow the inside of the acrylic foam tape to dry. (The surface dries white.)

<Reference> 10-15 minutes at 40-60℃

(7) Rub the remaining acrylic foam tape on the body with a rag (take. (8)

If any acrylic foam tape remains after performing steps (7), apply Remover Bond 7 and scrape it off with a Polyscraper.

(9) Peel off the plastic tape and clean the body with white gasoline.

When using tape removable disks

1 Vehicle mounting surface bay 掃

(1) Fully protect the acrylic foam tape remaining on the body Apply tape (plastic tape).

<Reference> To protect the body, apply masking paper etc. around the plastic tape.

(2) Set 8 discs in the holder and insert the removable disc.

Attach to air drill or electric drill. Caution: Use an electric drill with a no-load rotation speed of 2000 to 3000 r/min. do.

(3) Wear safety glasses and scrape off the acrylic foam tape.

注意 - Pay attention to the direction of rotation of the disc and the of the work. Visually check the cutting area to avoid damaging the molding by cutting too much.

(4) Peel off the plastic tape and clean the adhesive surface with white gasoline

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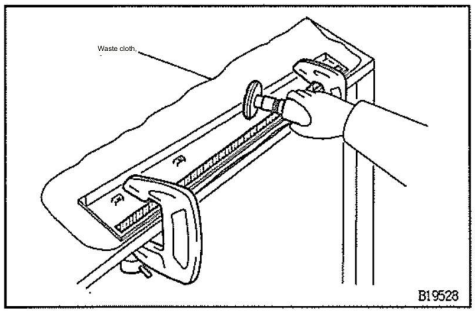

2 Cleaning the front door window rear frame molding (when reusing the molding) (1) Fix the molding in a vise using a cloth.

(2) Scrape off the adhesive in the same way as cleaning the vehicle mounting

注意 surface. Do not damage the molding.

(3) Clean the molding with white gasoline.

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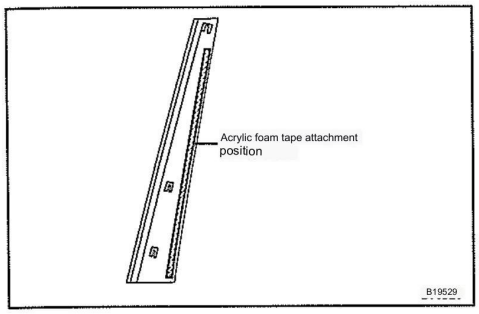

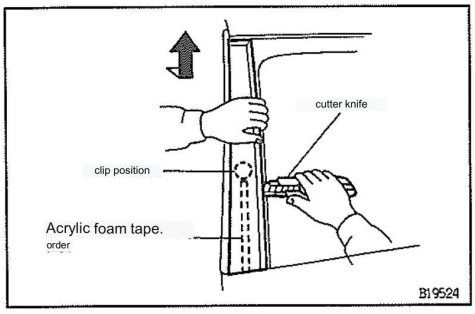

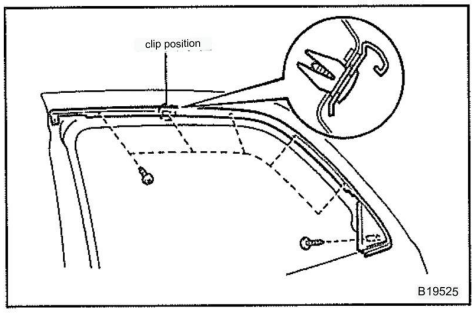

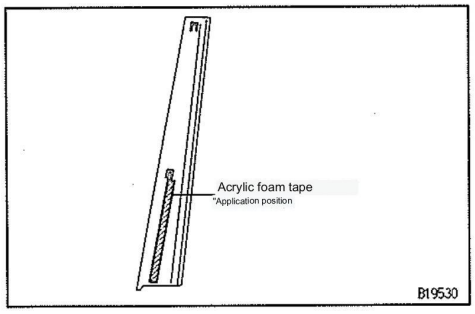

3 Front door window rear frame molding installation

(1) Paste the acrylic foam tape in the position shown in the illustration. (When reusing molding)

(2) Warm the molding and body surfaces.

<Reference> Body 40~60°C

Molding 20~30°C

(3) Peel off the release paper of the acrylic foam tape without touching the adhesive surface. (4) Set the molding on the vehicle and press it by hand to crimp it.

Rear door window frame molding

Related parts removal

- Rear door window frame molding related parts removed

Shiha "Front" & Rear door (Rear door disassembly: ①~④, ⑥~①) reference"

Rear door window frame molding

Removal

1 Removal of rear door window frame molding

(1) Remove the two screws and nuts (on the inside of the door). (2) Warm the molding with an infrared lamp, etc.

<Reference> 3-5 minutes at 40-60°

(3) Lift the molding by hand and use a utility knife to remove the Separate the molding from the molding. (4) Unfasten the clip and remove the frame molding.

Zusu.

2 Removal of rear door upper front molding

(1) Remove the 6 screws.

(2) Unfasten the clip and remove the front molding.

Zusu.

Rear door window frame molding installation

1 Vehicle side mounting surface cleaning

- Clean the mounting surface on the vehicle side in the same way as the ``front door window frame molding."

2 Cleaning rear door window frame molding (when reusing

- molding) Same as "front door window frame molding"

Clean out the molding.

3 Installing rear door window frame molding

(1) Paste the acrylic foam tape in the position shown in the diagram. (When reusing molding)

(2) Warm the molding and body surfaces.

<Reference> Body 40-60°C

·Molding 20-30°C

(3) Peel off the release paper of the acrylic foam tape without touching the adhesive surface.

(4) Set the molding on the vehicle and press it by hand to crimp it.

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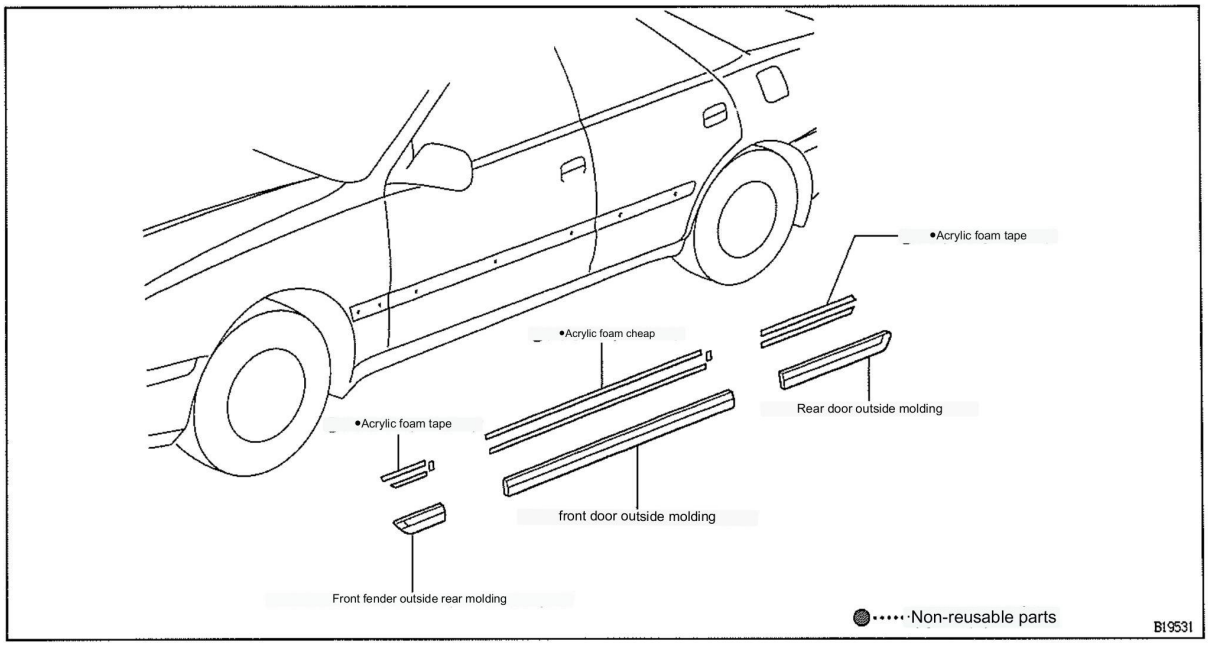
outside molding

Detachment configuration diagram



Outside molding removal

1 Outside molding removal

(1) Apply protective tape (plastic tape) around the outside of the molding.

Ru.

(2) Warm the molding with an infrared lamp, etc.

(*)

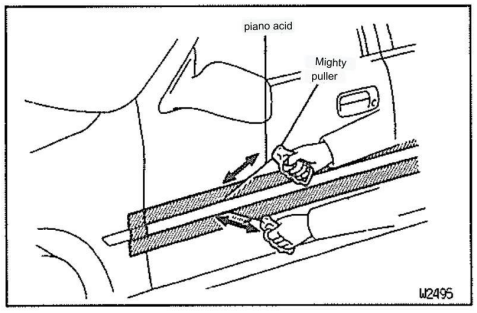
(3) Set the piano wire on the Mighty Puller.

(4) Cut the adhesive part with piano wire and remove the molding.

Note® · When reusing molding, use Mighty Blur as much as possible.

Align it along the body and do not damage the molding edges.

· There is a boss at the location shown in the figure below, so avoid it when cutting.



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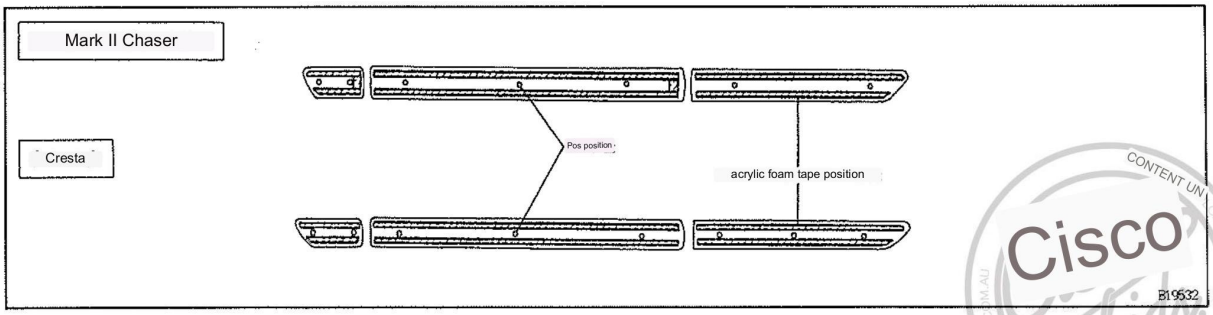

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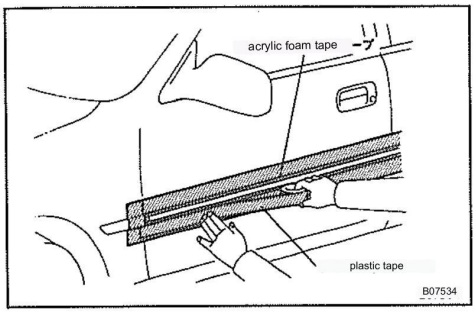
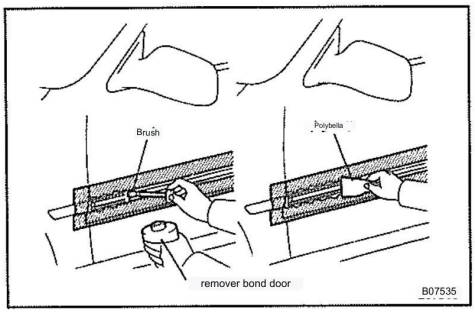




Outside molding installation

When using solvents

1 Cleaning the mounting surface on the vehicle side

(1) Apply protective tape (plastic tape) all the way around the remaining acrylic foam tape on the body.

<reference> Masking is also applied around the plastic tape to protect the body. It is a good idea to attach paper, etc.

(2) Apply Remover Bond 7 as thickly as possible to the remaining acrylic foam tape on the body.

注意 - Shake the can of Remover Bond 7 well before use.· If Remover Bond 7 adheres directly to the painted surface, it may cause blisters on the paint film, so wipe it off immediately.· If blistering occurs on the paint film, heat the defective area to 80℃ using an infrared どで lamp, and apply thinner-soaked wafer every 4 to 5 minutes. Repeat this process by pressing it down with a water bottle and letting it penetrate.

(3) Warm up the acrylic foam tape remaining on the body using an infrared lamp or similar device.

注意 If the surface is heated until it becomes white and dry, the acrylic foam tape will be difficult to remove in the next step, so stop before that step.

(Reference) 3-5 minutes at 40-60℃

(4) Scrape off the acrylic foam tape remaining on the body using a polyvera. Make the wall thickness

注意 of the acrylic foam tape sufficiently thin before starting the next process. Move to.

(5) Apply Remover Bond 7 again to the acrylic foam tape remaining on the body.

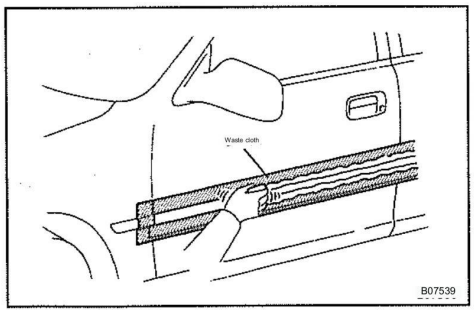
(6) Warm up the acrylic foam tape remaining on the body using an infrared lamp or similar device.

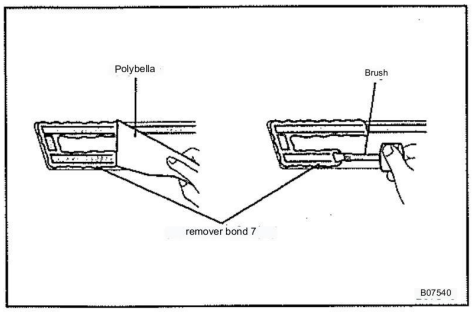
Caution: Allow the inside of the acrylic foam tape to dry. (The surface dries white.)

〈参考〉 10-15 minutes at 40-60℃

(7) Rub the acrylic foam tape remaining on the body with a cloth etc. take.

(8) If acrylic foam tape remains after steps (7), remove it. Apply Burbond 7 and scrape it off with a poly-scraper. (9) Peel off the plastic tape and clean the body with white gasoline.





2 Outside molding bay cleaning (when molding is reused)

(1) Pour the required amount of Remover Bond 7 into the P.P. cup and apply it as thickly as possible to the acrylic foam tape remaining on the molding using a Polystylus or brush.

(2) Warm the molding with an infrared lamp.

注意 If the surface is heated until it becomes white and dry, the acrylic foam tape will be difficult to remove during the process, so stop before

(3) Scrape off the acrylic foam tape remaining on the molding with an S/K scraper.

(4) Clean the molding with white gasoline.

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3 Outside molding installation

(1) Attach acrylic foam tape to the surface of the molding Ru. (When reusing the molding)

(2) Warm the molding and body surface.

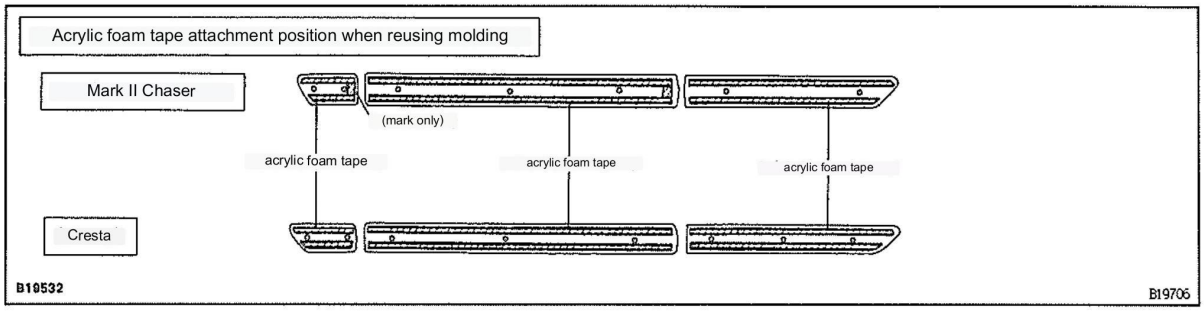
(Reference) Body 40~60°C

Molding 20~30°C

(3) Place the release paper of the acrylic foam tape so that it does not touch the adhesive surface. Then peel it off.

(4) Set the molding on the vehicle and press it by hand to crimp it.

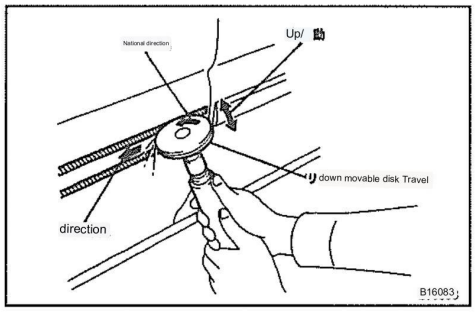
(5) Press the molding thoroughly with a roller.



When using tape removable disks

1 Cleaning the vehicle mounting surface

(1) Apply protective tape (plastic tape) all the way around the remaining acrylic foam tape on the body. <Reference> To protect the body, apply masking paper etc. around the plastic tape.



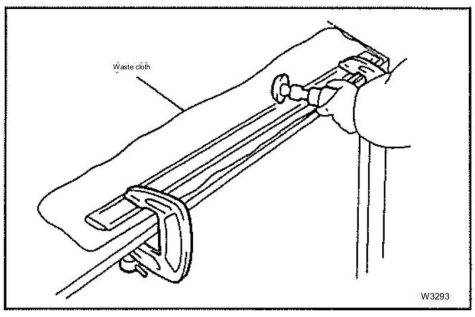
(2) Set 8 discs in the holder and attach the removable disc to an air drill or electric drill.

Note Use an electric drill with a no-load rotation speed of 2000~3000r/min. do.

(3) Wear safety glasses and scrape off the acrylic foam tape.

CAUTION • Be careful of the direction of rotation of the disc and the direction of work progress.· Visually check the cut area to avoid damaging the body by cutting too much. Do it while doing it. (4) Peel off the plastic tape and clean the adhesive surface with white gasoline.

comonent



2 Outside molding cleaning (When reusing molding)

(1) Secure the molding with a cloth. (2) Scrape off the acrylic foam tape in the same way as the vehicle side mounting surface.

(Caution) Do not damage the molding.

(3) Clean the molding with white gasoline.

3 Installing the outside molding

(1) Install the molding in the same manner as in ``When using solvent."

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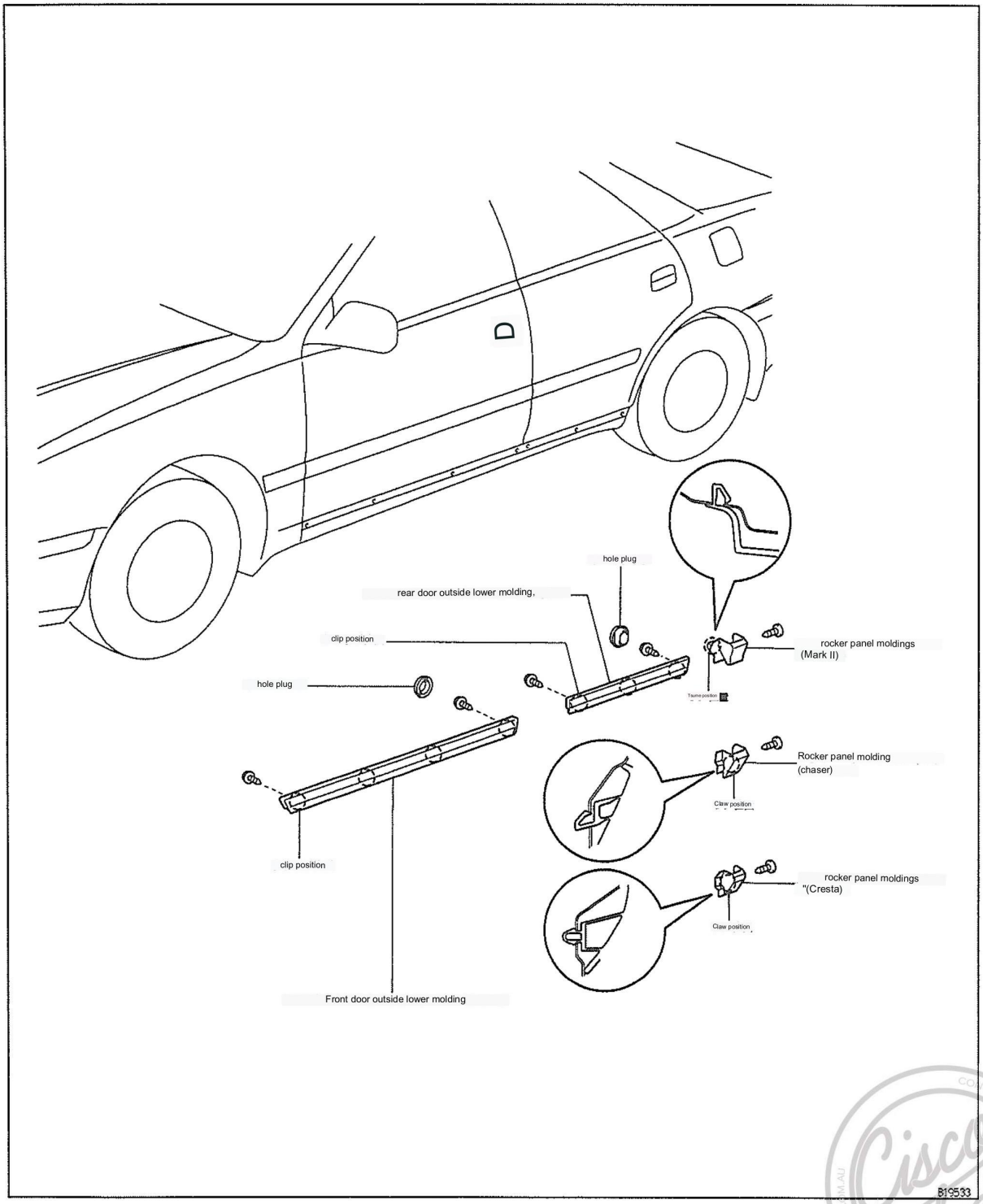
T0049887

outside lower molding

Detachment configuration diagram



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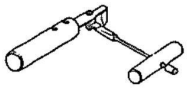
T0049288

windshield glass & molding

preparation Goods

tool

 TB-603 windshield knife 傷 Treated like a banzai		For glass removal *
Replacement blade (for windshield knife)	50604	For glass removal
Side molding removal tool set	10901	For glass removal *
mighty blur	53901	glass removal 用
sealant gun	11001	For glass adhesive application

Oils and fats Others

duct tape	50701	For glass removal (when reusing glass)
protective tape	53501	For preventing scratches on painted surfaces
cutter knife	50601	For molding removal
piano wire	52001	For glass removal
plastic plate	52301	Safety pad for preventing scratches
soapy water	32601	For glass removal
knife	51701	For adhesive removal
suction rubber	52601	For glass mounting
white gasoline	32701	For cleaning glass and coated surfaces
Urethane adhesive/Sunstar Giken Co., Ltd. Penguin Seal #580 and special primer	53302	For glass mounting *
Adhesive or equivalent above	53301	For glass mounting
three cement black	51001	For water leak repair

* Sueoka Shoten Co., Ltd. Automotive Repair Products Division 2-5-1 Gokisho, Showa-ku, Nagoya TEL (052)882-9266 (Main)

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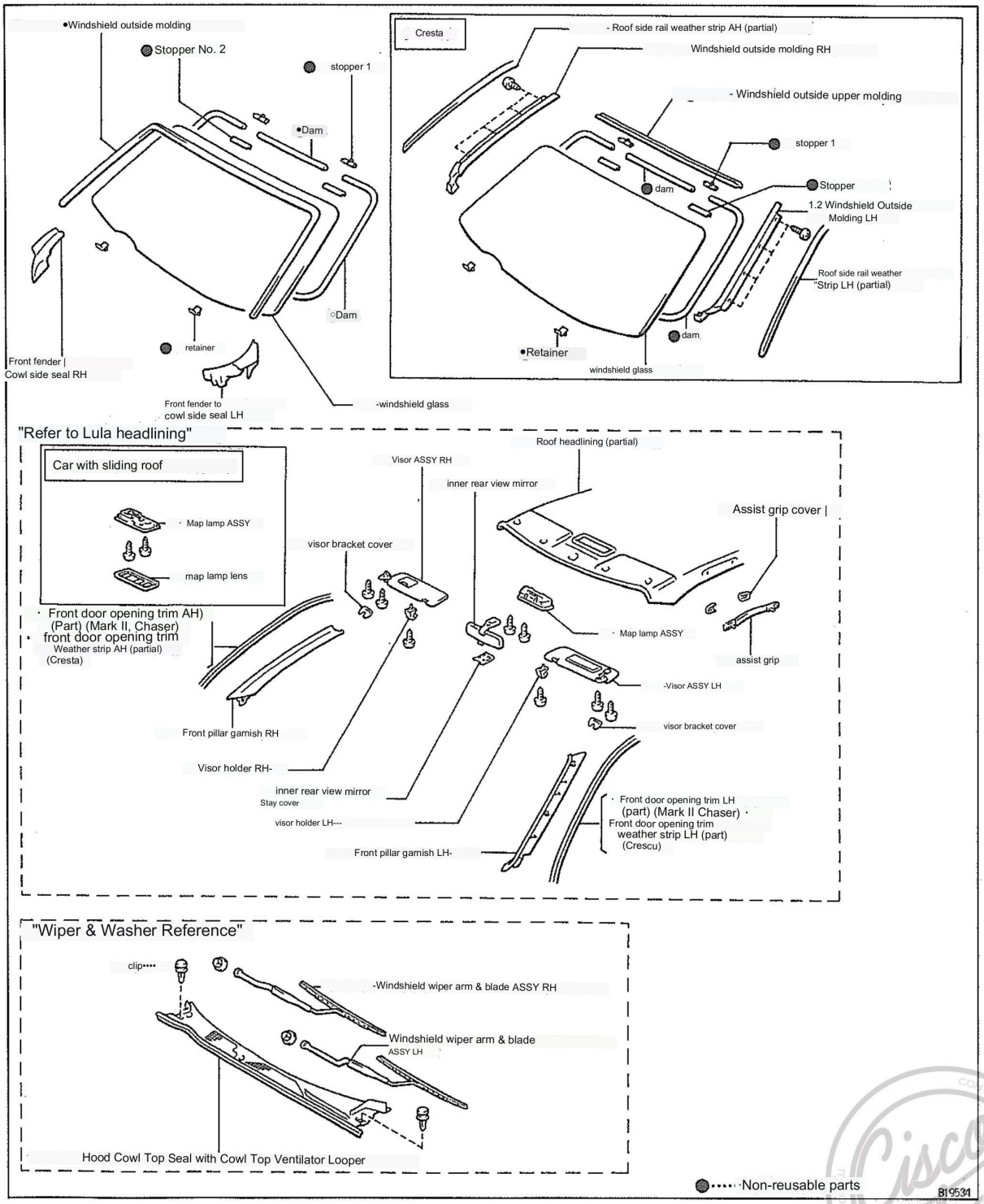
timesbox Kaiho

T0040389

windshield glass & molding

Detachment configuration diagram



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Removing windshield glass related parts

- For information on removing windshield glass related parts, see "Roof head lining (roof head lining removal: 18~2)".

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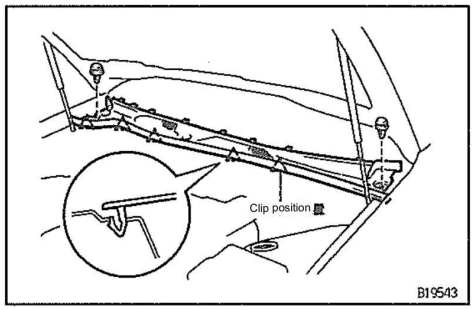
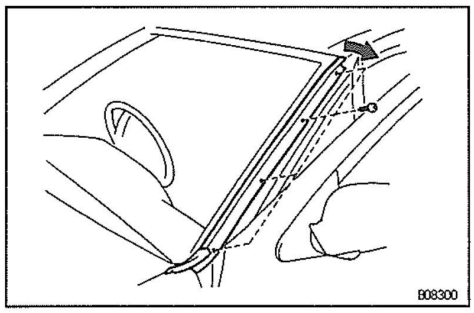


1 Front fender to cowl side seal removal (Mark II, Chaser)

2 Hood to Cowl Top Seal with Cowl Top Ventilator Looper Removal

(1) Remove the two clips using a clip remover.

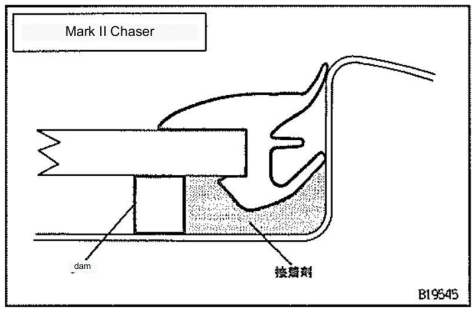
(2) Disengage the clip and remove the ventilator louver.



3 Partial removal of roof side rail weather strip (Cresta)

4 Windshield outside molding removal (Cresta)

(1) Remove the 4 screws and remove the molding.



Windshield Glass & Molding

Removal

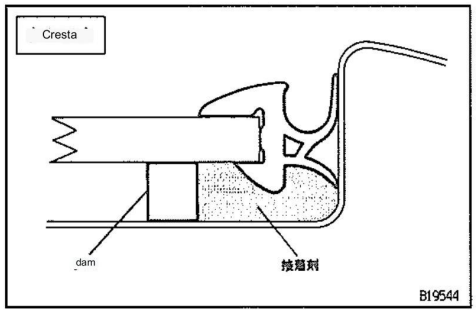
1 Windshield outside molding removal (Mark II Chaser)・

Windshield outside upper molding removal

Remove (Cresta) (1)

Lift up the molding from both ends with your hands, and remove the molding.

Remove the plug. <Reference> If the molding is fixed with adhesive, モー cut the molding part with a utility knife.



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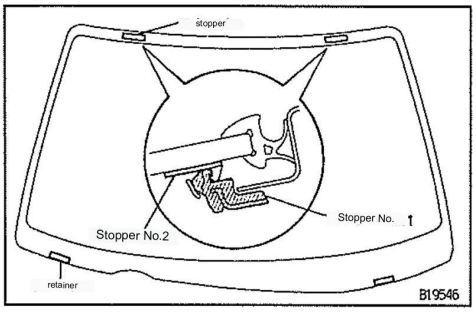
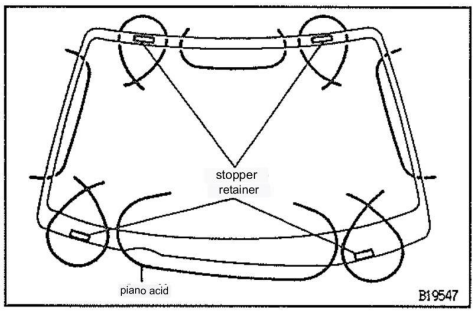


2 Windshield glass removal

注意 · When reusing glass, clean the glass and bottle before removing it. Apply packing tape or similar to the day panel and use a pen to mark the alignment for installation.

· The stopper and retainer are installed at the location shown in the diagram on the glass. Since the glass is attached, be careful not to break it when cutting.

· Depending on the cutting location and situation, use piano wire or a windshield knife to perform the work.

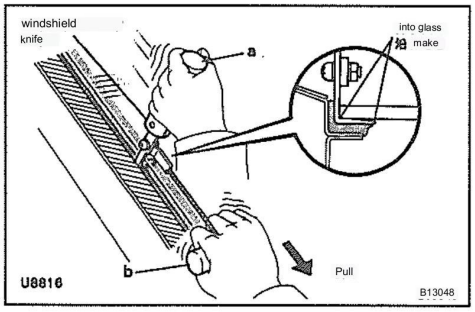


(1) Apply protective tape to the body surface around the glass.

(2) Pass the piano wire (0.6mm is suitable) as shown in the figure, and tie both ends to the Attach it to the rack.

(3) Cut the adhesive by pulling the piano wire alternately.

Note 注意 Do not let the piano wire come into strong contact with the edge of the glass. · When making the area near the safety pad 業and roof headlining, apply a plastic protective plate to prevent damage from piano wire.



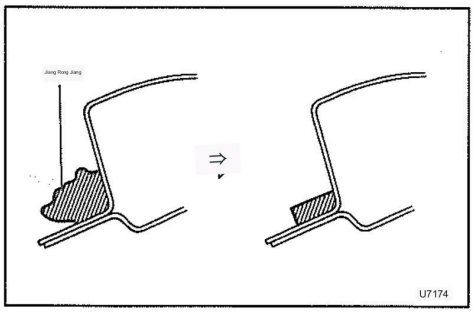
(4) When using a windshield knife, apply soapy water to the adhesive area. Apply thoroughly.

(5) Insert the windshield knife into the adhesive part.

(*) Start from a place where there is a wide space between the glass and the body.

(6)Align the blade of the windshield knife with the glass surface and edge while holding the edge of the blade and the edge of the glass at right angles at part a. Then, pull part b parallel to the edge of the glass to separate it.

注意 When using a windshield knife, windshield Never pry the knife.



Points to note during installation work

1 Preparation before vehicle installation

(1) If the cut vehicle side adhesive is noticeably uneven, use a knife, etc. to smooth it out.

注意 Be sure to leave some adhesive behind.

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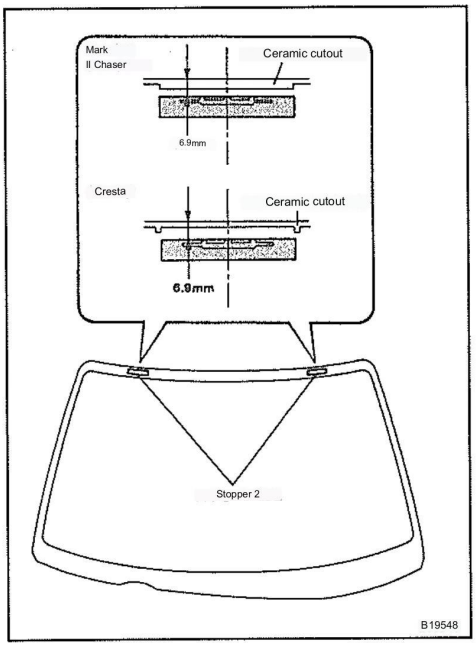

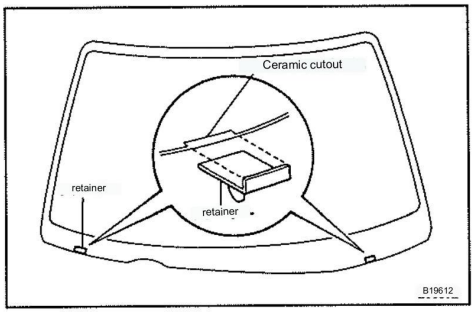

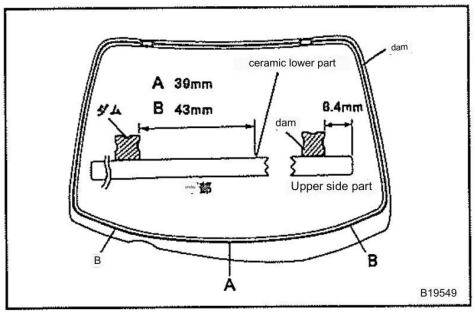

2 Work before windshield glass installation

(1) Remove damaged stoppers No. 1 and No. 2.

(When reusing glass)

(2) Scrape off the adhesive and double-sided tape remaining on the glass. (3) Clean

(When reusing glass)

the outer periphery of the glass with white gasoline.

注意 Be sure to clean the chemical glass as well.

(4) Apply special primer to the attachment part of stopper No.2.· Do not

注意 apply too thickly.

· After the primer dries (about 3 minutes), attach stopper No. 2.

(5) Attach a new stopper No. 2 to the location shown in the diagram on the glass.

注意 Pay attention to the direction of the stopper.

(6) Attach stopper No. 1 to the body side.

(7) Remove the damaged retainer. (When reusing glass) (8)

Scrape off the adhesive and double-sided tape remaining on the glass.

(When reusing glass)

(9) Apply a special primer to the retainer attachment area.

注意 · Do not apply too

• thickly. After the primer dries (about 3 minutes), attach the retainer. (10)

Attach a new retainer to the glass at the location shown in the diagram.

(11) Apply special primer to the dam attachment part. Don't

注意 • apply too thickly.

- Glue the dam after the primer dries (about 3 minutes).

(12) Install a new dam on the glass at the location shown in

the diagram. (13) Place the glass on the body using suction rubber, and then

The width of the side part is uniform (the gap between the body and the edge of the glass is uniform).

position.

(14) Confirm that there is no problem in installing the molding.

(15) Make alignment marks on the glass and body sides.

Caution Check that stoppers No.1 and No.2 are engaged from indoors.

do.

〈参考〉 When reusing glass, check and correct alignment mark

positions.

3 Windshield glass & molding installation (1) At the adhesive

part on the vehicle side, the body surface is exposed (no adhesive remains).

Apply a special primer to the affected areas.

注意 · Do not apply too thickly.

· Do not apply to adhesives.

· Pay particular attention to panel joints and spot welding locations when applying

do. -

Glue the glass after the primer dries (about 3 minutes).

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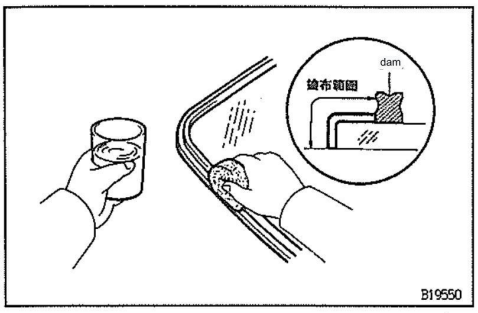
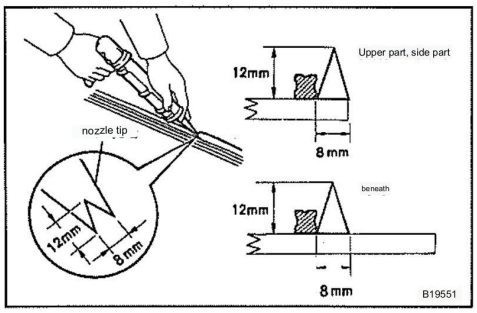


(2) Apply a special primer to the glass bonding area. Do not apply too thickly.

Apply adhesive after the primer dries (about 3 minutes).



(3) Cut the tip of the adhesive nozzle as shown.

(4) Set the adhesive in the sealant gun.

(5) Apply a bead of adhesive along the dam as shown. (6) Use the suction rubber to match the alignment marks and remove the glass.

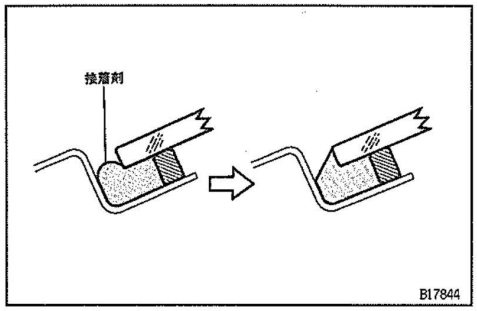
wear. Foam

pouring Confirm that stoppers No.1 and No.2 are engaged from indoors.

do. (7)

Gently press the front of the glass to ensure complete contact.

<Reference> Pressing force 98N {10kgf} or more



(8) Correct any protruding or insufficient adhesive using a spatula.

•Caution: Apply adhesive up to the edge of the glass.

(9) Install the new outside molding before the adhesive hardens.

[Note] Align the outside molding with the center of the body.

Attach.

(10) Hold the windshield outside molding with protective tape until the adhesive hardens.

(11) Clean up excess adhesive before it hardens.

<Reference> For the minimum drying time after adhesion, running time, etc., follow the instructions of each adhesive manufacturer and the instruction manual for each adhesive.

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4 Water leak inspection and repair

(1) After the adhesive hardens, confirm that there is no water leakage.

(2) If water leaks, fill it with Three Cement Black after it dries.

Windshield glass related parts installation

- For information on installing windshield glass related parts, refer to "Wiper & Washer (Notes on installing wiper motor & link: 2 Windshield wiper arm installation)"

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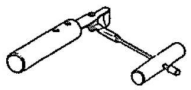
T0048380

back window glass & molding

Preparation items

工 具

 TB-603	windshield knife (株)Treated like a banzai	For glass removal *
Replacement blade (for windshield knife) 50604		For glass removal
Side molding removal tool set 10901		For glass removal *
mighty blur 53901		For glass removal
sealant gun 11001		For glass adhesive application

Oils and fats Others

duct tape 50701	For glass removal (when reusing glass)
protective tape 53501	For preventing scratches on painted surfaces
cutter knife 50601	For molding removal
piano wire 52001	For glass removal
soapy water 32601	For glass removal
knife 51701	For adhesive removal
suction rubber 52601	For glass mounting
white gasoline 32701	For cleaning glass and coated surfaces
Urethane adhesive/Sunstar Giken Co., Ltd. Penguin Seal #580 and special primer 53302	For glass mounting *
Adhesive or equivalent above 53301	For glass mounting
three cement black 51001	For water leak repair

* Sueoka Shoten Co., Ltd. Automotive repair product line 2-5-1 Gokisho, Showa-ku, Nagoya TEL (052)882-9266 (Main)

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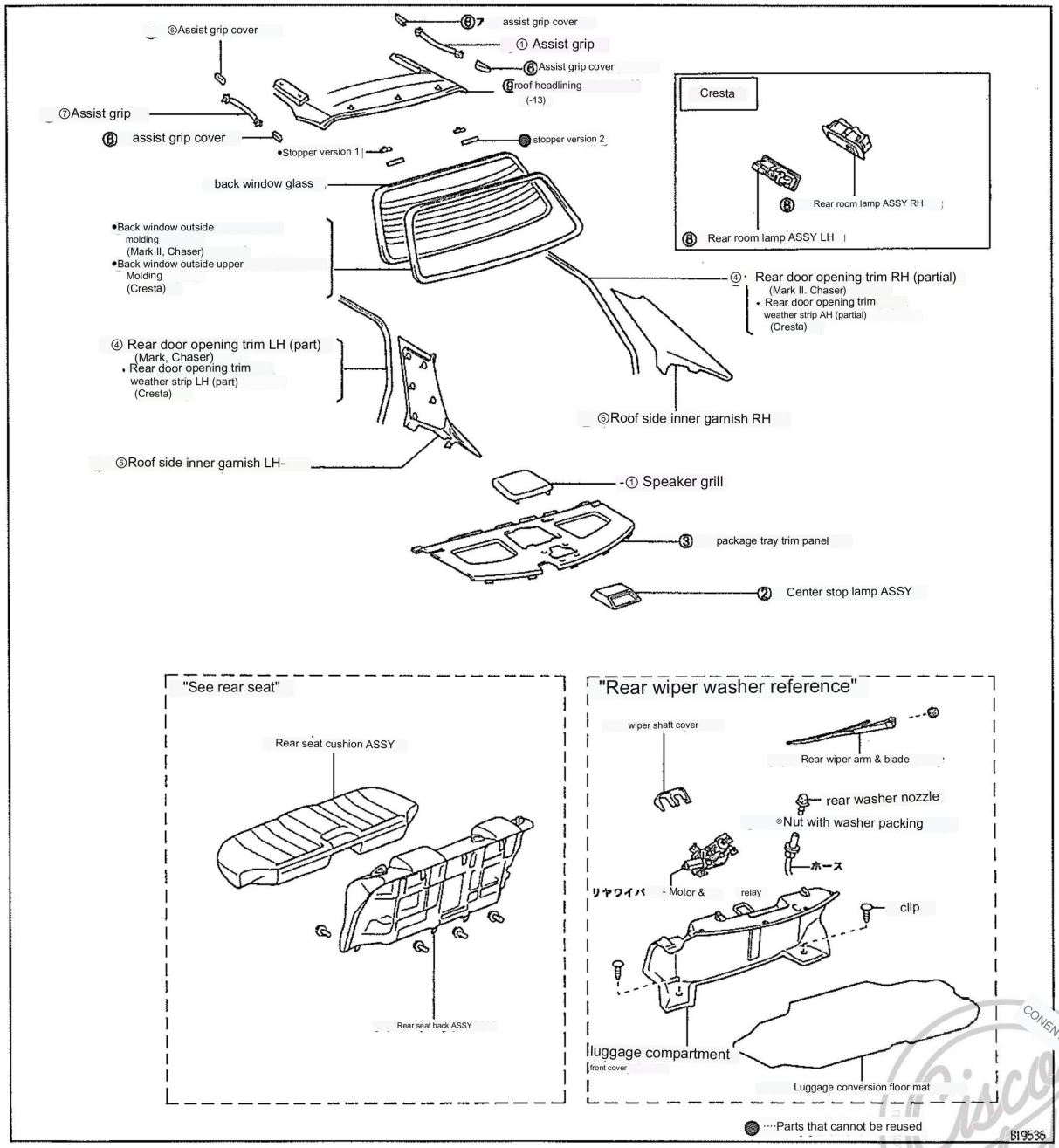
back window glass & molding

Dehydration configuration diagram

〈参考〉 The numbers given to the part names are examples of installation and removal procedures.



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Removal of back window glass related parts

- Rear seat ASSY

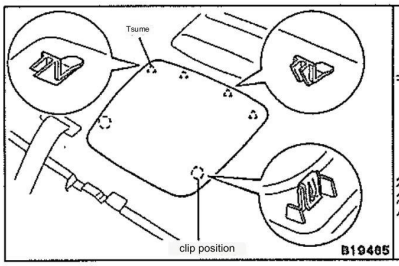
reference)

- Rear wiper motor & relay ASSY installation/removal:

Wiper & washer (rear wiper motor & link removal)

Sushi: See ① ~ ④

①



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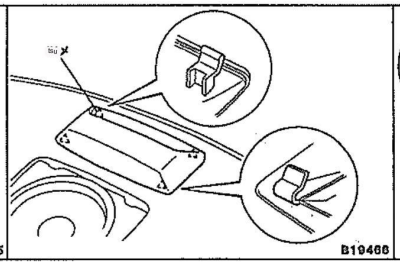

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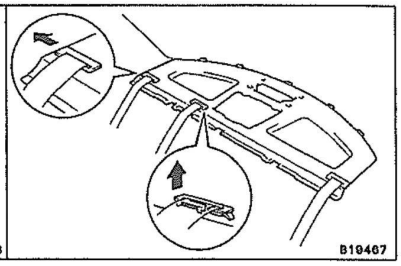

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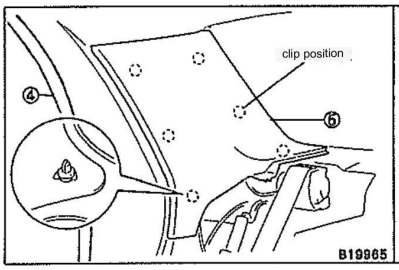

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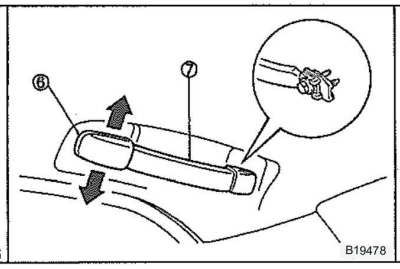
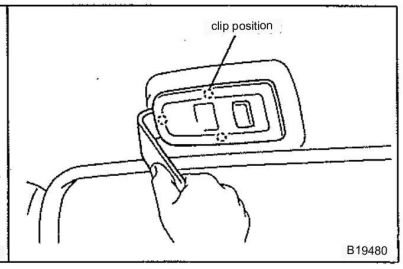


⑧ Cresta only



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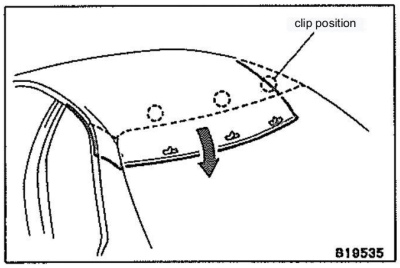

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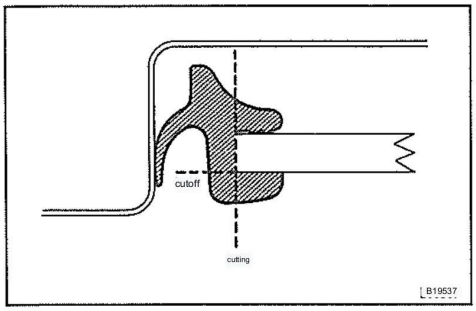


Back window glass & molding

Removal

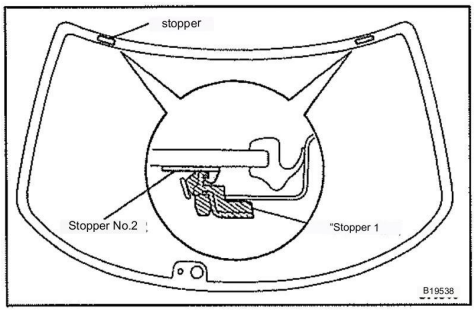
1 Removing the back window outside molding

(Mark II Chaser)

· Remove back window outside upper molding (Cresta)

(1) Disconnect the defogger and antenna cord connectors. (2) Cut the molding with a utility knife.

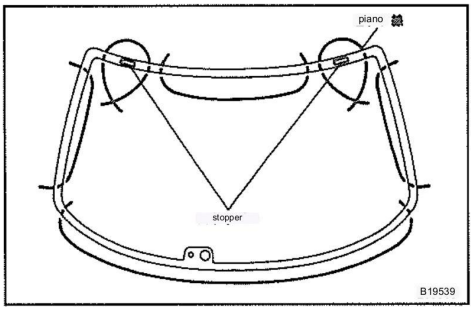
(reference) It is best to remove it by cutting it partially and then pulling it by hand.



2 Removing the back window glass

注意 · When reusing glass, apply duct tape, etc. to the glass and body panel before removing it, and use a pen to mark the installation time. Add alignment marks. -A

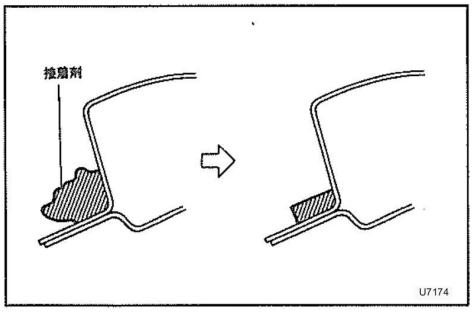
stopper is attached to the glass at the location shown in the diagram, so be careful not to damage the glass when cutting.



(1) Apply protective tape to the body surface around the back door glass. (2) Pass the piano wire (0.6mm is suitable) as shown in the figure, and tie both ends to the Attach it to the rack.

(3) Cut the adhesive by pulling the piano wire alternately. Do not let the

注意 piano wire come into strong contact with the edge of the glass.



Points to note during installation work

1 Preparation before installation on vehicle side

(1) If the cut vehicle side adhesive is extremely uneven, use a knife or the like to make sure to smooth.

注意 leave a small amount of the adhesive.

2 Preparation before installing the back window glass (1) Remove the damaged stoppers No. 1 and No. 2.

(When reusing glass)

(2) Scrape off the adhesive and double-sided tape remaining on the glass.

(When reusing glass) (3)

Clean the outer periphery of the glass with white gasoline.

注意 Be sure to clean new glass as well.

(4) Apply a primer specifically designed for the stopper No. 2 mounting

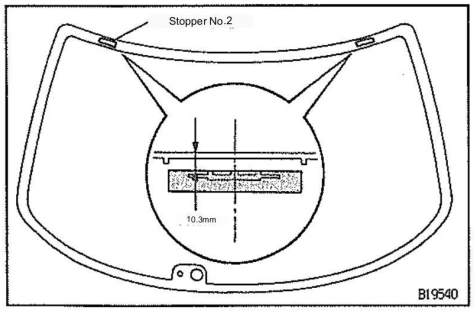
注意 section. · Do not apply

COM · After the primer dries (after about 3 minutes), attach stopper 1.2.

(5) Attach a new stopper No. 2 to the location shown in the diagram on the glass.

注意 Pay attention to the direction of stopper No.2.

(6) Attach stopper No. 1 to the body side.



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Congratulations
too thickly
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3 Back window outside molding installation

(Mark II Chaser)

• Back window outside upper molding installation

(Cresta)

(1) Attach new molding to the outer periphery of the glass.

4 Back door glass installation

(1) At the adhesive part on the vehicle side, the body surface is exposed (no adhesive remains).

Apply a special primer to the affected areas.

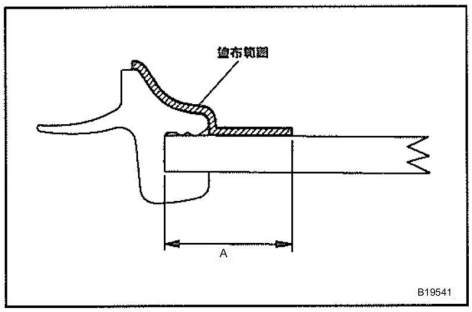
注意 · Do not apply too thickly.

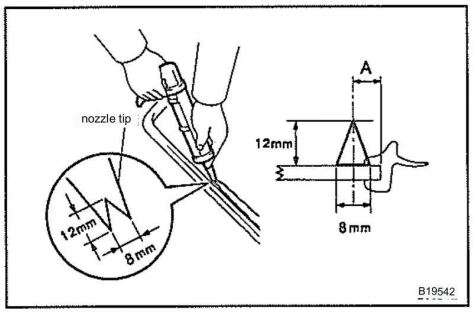
· Do not apply to adhesives.

· Pay special attention to the panel joints and spot adhesive locations.

to clothe

· After the primer dries (about 3 minutes), glue the glass.





(2) Apply a special primer to the glass bonding area.

Area A in the diagram: Application range

• Mark II, Chaser, Cresta...Top, side 12.5mm

• Mark II, Chaser ····· · Bottom 14mm

·····Lower 13.5mm

Note · Do not apply too

thickly.· After the primer dries (about 3 minutes), apply the adhesive.

(3) Cut the tip of the adhesive nozzle as shown.

(4) Set the adhesive in the sealant gun.

(5) Apply adhesive along the molding and dam as shown. Apply in a bead.

Dimensions of part A in the diagram (glass end surface ~ center of adhesive)

· Mark II, Chaser, Cresta...Top, side 6.5mm

• Mark II, チェイサー····· Bottom 7.5mm

· Cresta · ·····下部 8mm ·

注意 Apply the adhesive so that it overlaps with the molding.

• Attach the glass immediately after applying the adhesive.

(6)Use a suction rubber disc etc. to match the alignment marks and attach the glass.

Attach.

注意 Check from inside the room that stoppers No. 1 and No. 2 are

engaged.

(7) Gently press the front of the glass to ensure complete contact.

<Reference> Pressing force 98N {10kgf} or more

· For minimum drying time after bonding, running time, etc., follow the instructions of each adhesive manufacturer and the instruction manual for each

5 Water leak inspection and repair

(1) After the adhesive hardens, confirm that there is

no water leakage. (2) If water leaks, apply Three Cement Black after

Fill it up.

drying.
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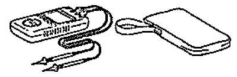
T0049745

sliding roof

Preparation items

tool

	09082-00030	toyota electrical tester	Single body point school
	09083-00150	test lead set	For individual inspection

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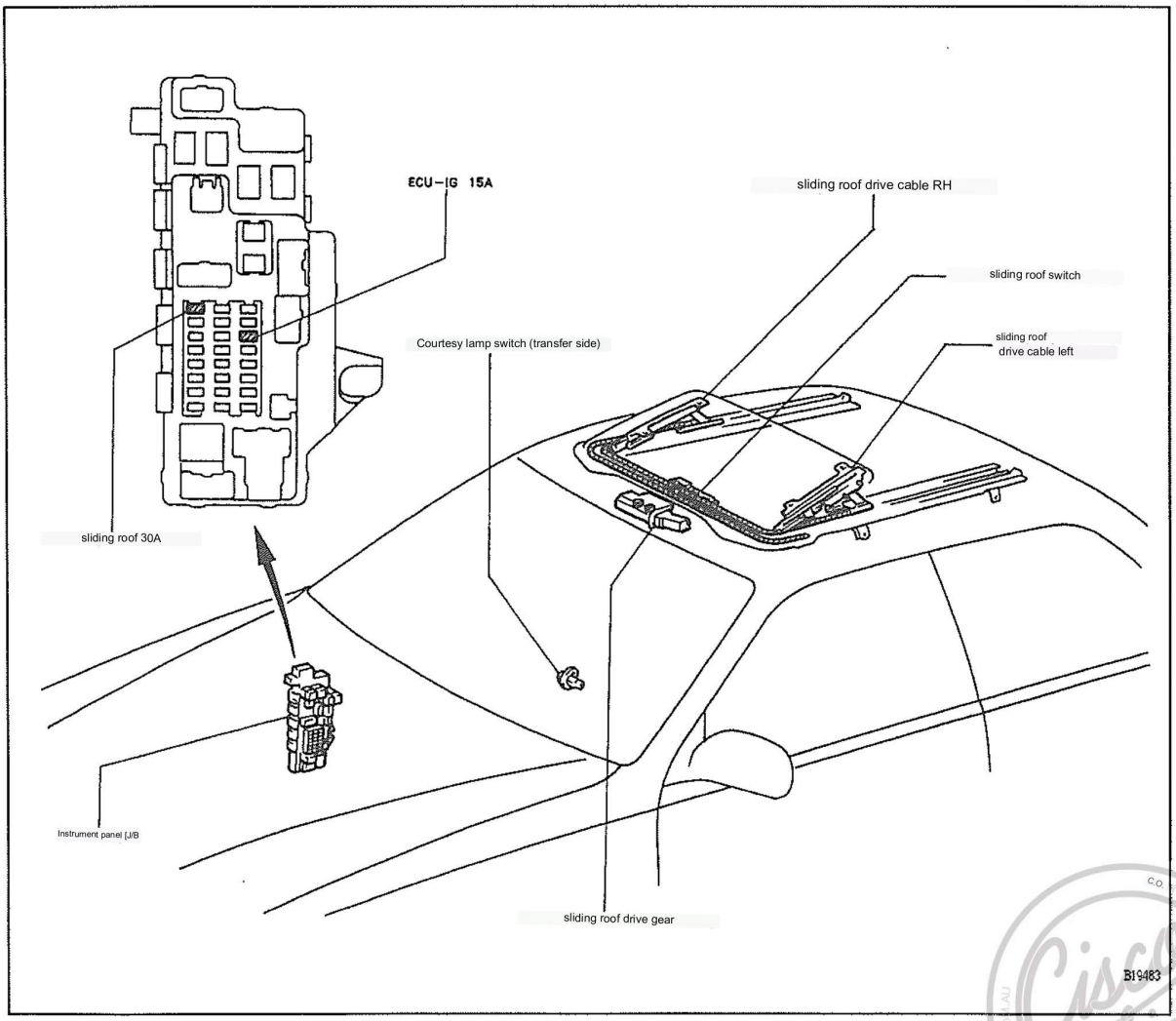
Parts layout diagram



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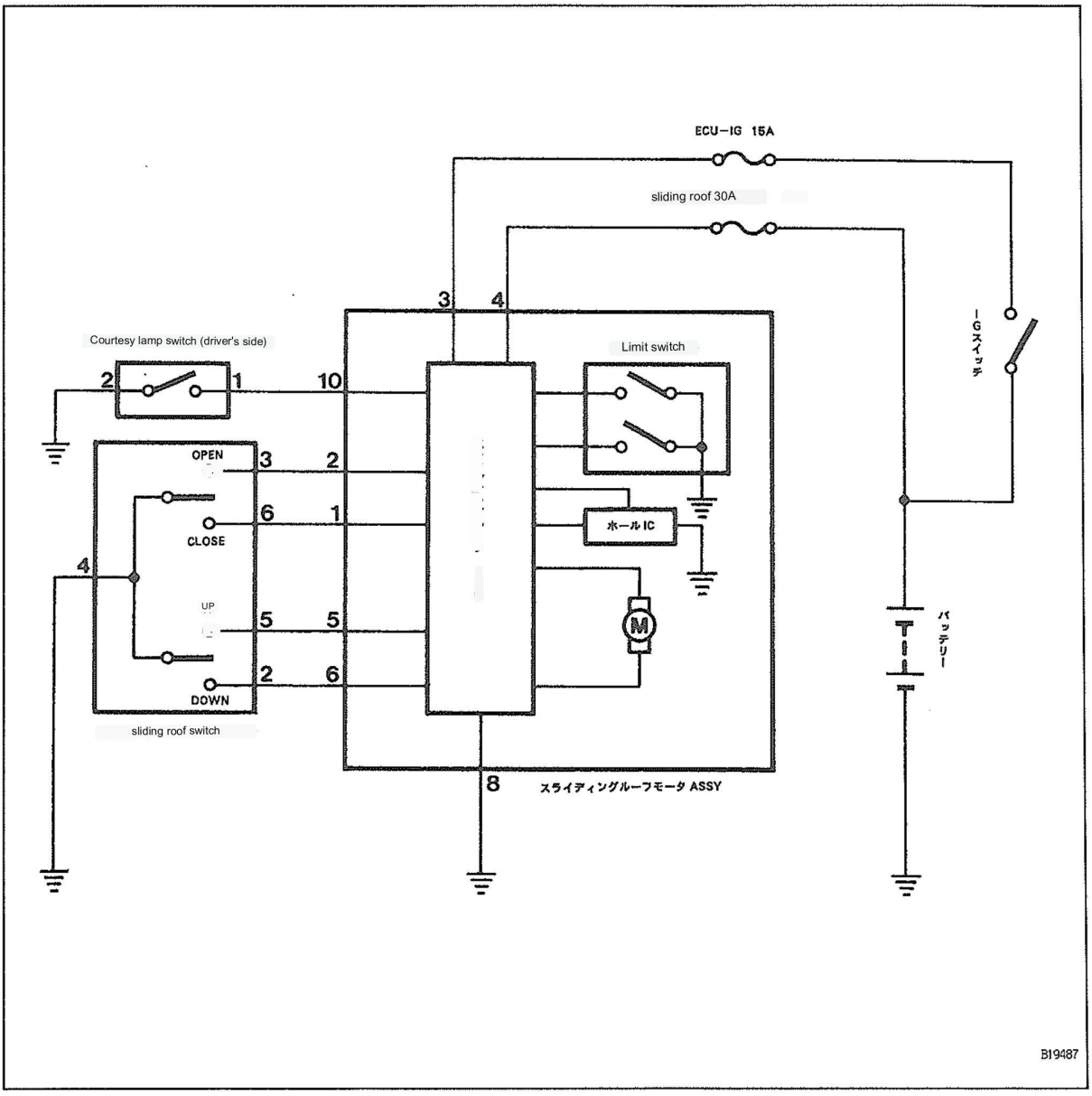
circuit figure



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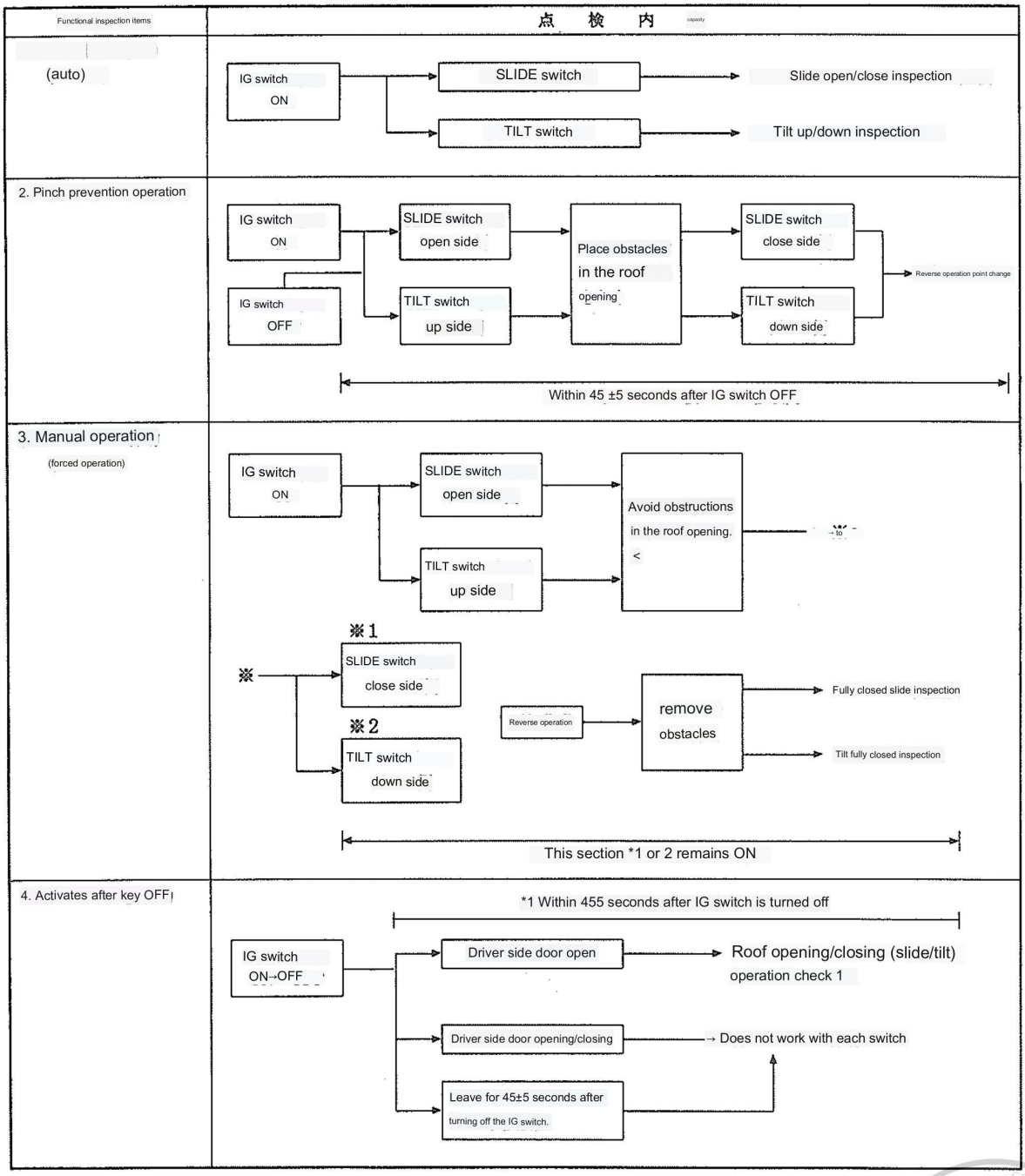
Functional check



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sliding roof

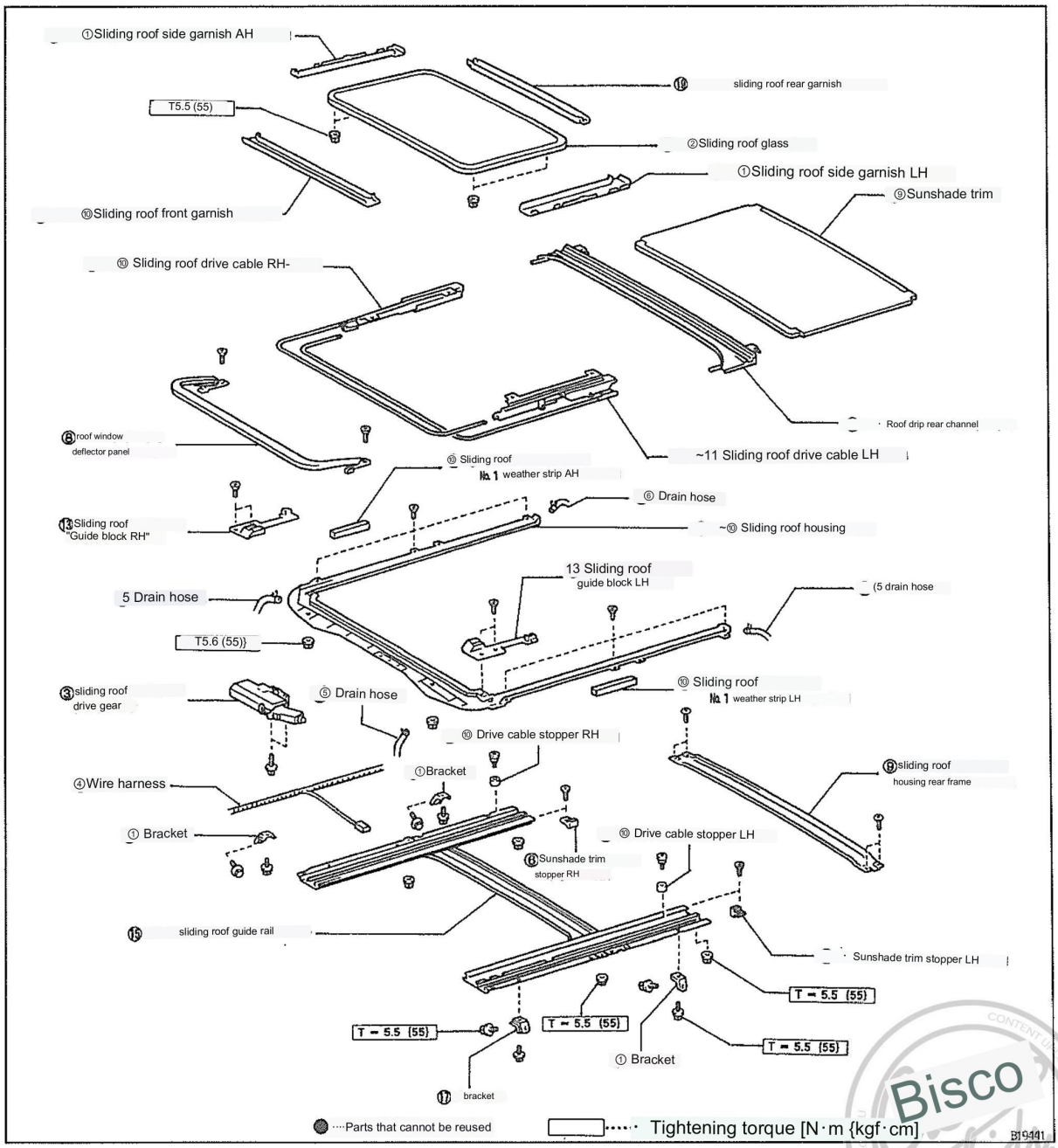
Detachable exploded configuration diagram

<Reference>

- For sliding roof installation/removal work, use the roof head lining

This involves attaching and removing the parts.

· The numbers given to the part names are examples of removal and disassembly procedures.



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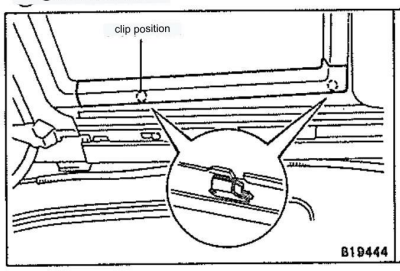
Sliding roof removal

•Caution

If the sliding roof position and the drive gear fully closed position are out of phase, the sliding roof will not operate properly even if all functional parts are normal. When removing the drive gear, be sure to fully close the sliding roof.

① RH and LH



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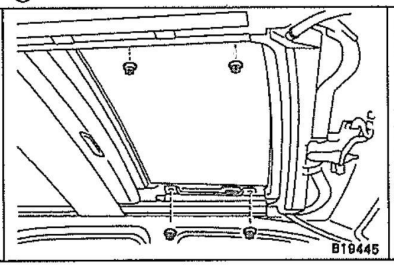

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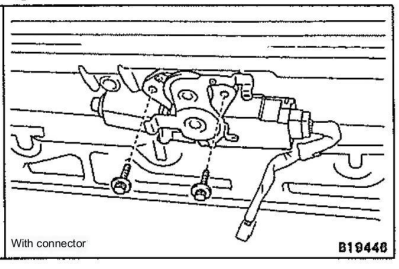

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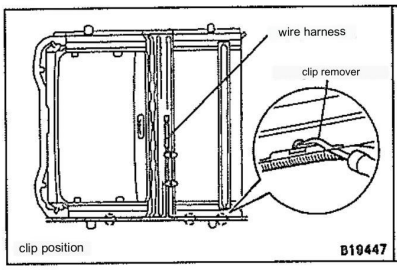
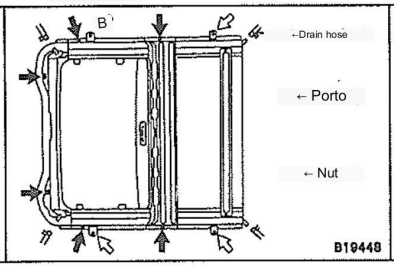
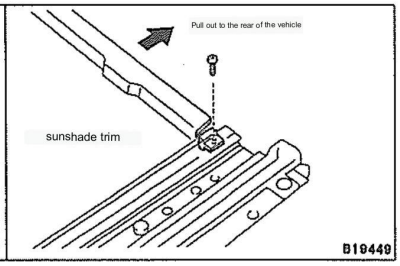


⑤ Removal

(Drain hose) +Housing ASSY

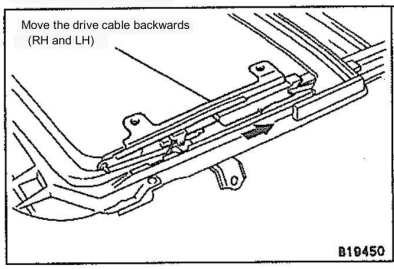


⑥ ⑦



⑧Removal work

(Roof window deflector panel)



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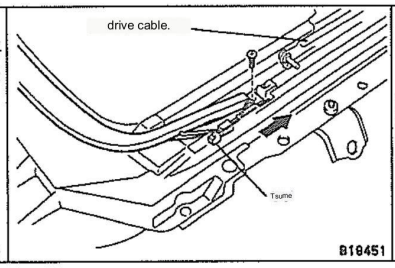

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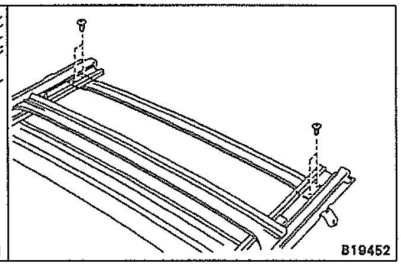
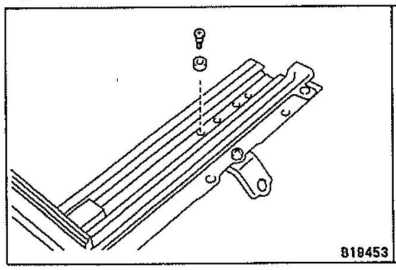
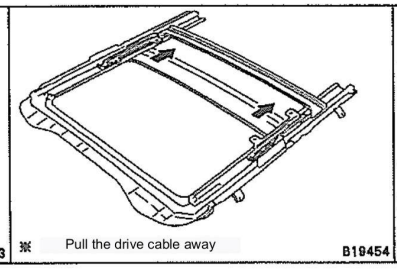


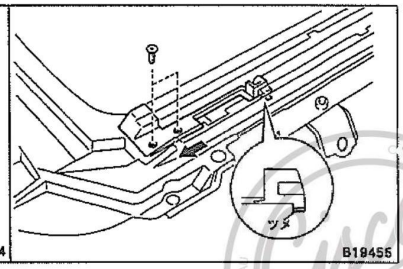
10RH and LH



⑪ ⑫ RH and LH



⑬ RH and LH



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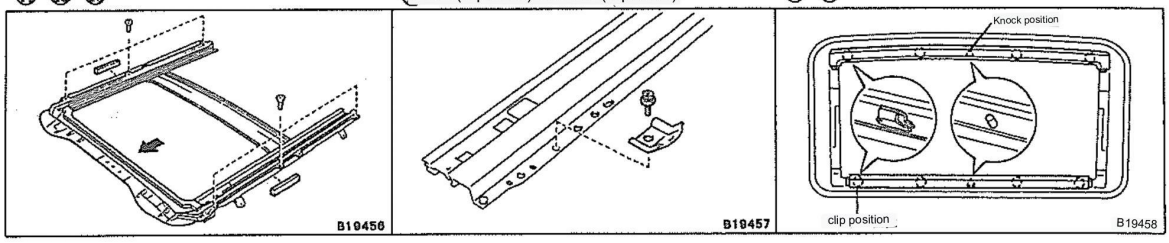
⑭ ⑮ ⑯ (7 RH (2 pieces) and LH (2 pieces) ⑱ ⑲



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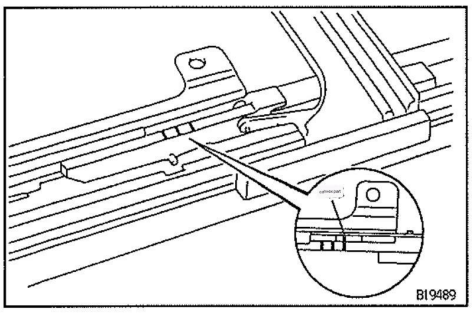
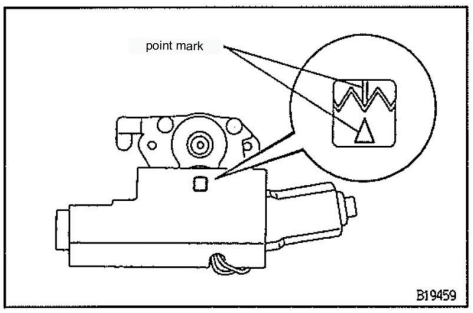


Points to note during installation work

1 Sliding roof drive cable fully closed position set •After moving the drive cable forward, move the cable attachment part and align the mark on the link with the center mark on the lift guide.

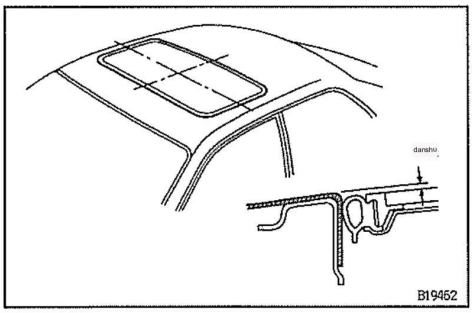


2 Installing the sliding roof drive gear · Make sure the alignment marks are aligned. (slide fully closed position)

3 Installing the sliding roof glass Caution

Make sure that the lip on the front side of the weather strip is not turned up.

Make sure that

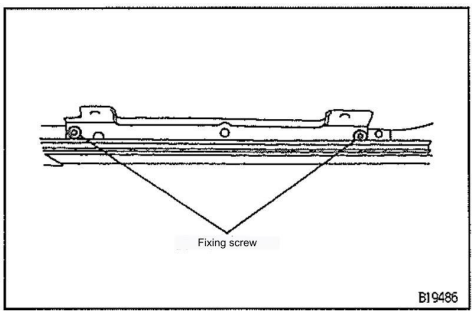


sliding roof adjustment

1 Level difference inspection (1) Check the level difference between the roof panel and the roof glass (molding part) when fully closed.

Reference Front: +1.0mm −0 2.0mm

rear: 0 +2.0mm −1.0mm



2 Sliding roof step adjustment

(1) Loosen the fixing screw using a Torx screwdriver T25, adjust the sliding roof bracket up and down, and tighten the fixing screw when the position is determined.

T=5.5N·m {55kgf·cm}

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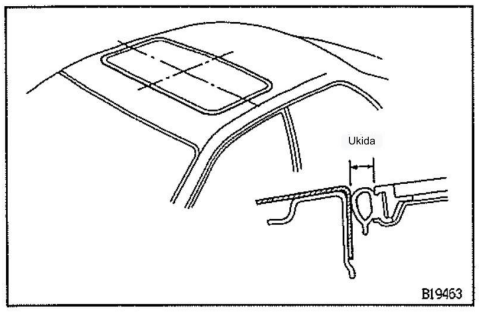
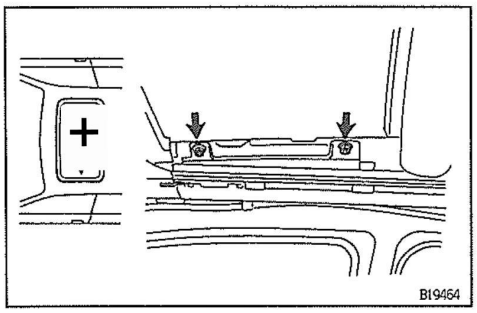


3 Gap inspection

(1) Check the gap between the roof panel and the roof glass when fully closed.

Uniform throughout the entire circumference

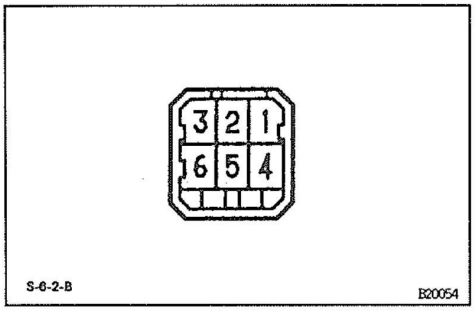


4 Sliding roof gap adjustment

(1) Loosen the 4 nuts and move the glass to adjust.

T0049750

Individual inspection



sliding roof switch

1 Continuity and lighting check

(1) Operate the switch and check the continuity between each terminal and the light bulb.

standard With ○○ conductor ○○ Lighting bulb

switching \ moko number		1	2	3	4	5	6
slide switch	OPEN			○	C		
	CLOSE						○
tilt switch	UP					-○	
	DOWN		○				
map lamp switch	ON	○	ⓥ		-○		
	OFF						

JA1326

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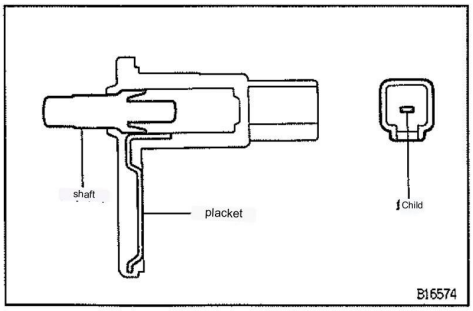

courtesy lamp switch

1 Continuity

check (1) Check continuity between connector 1 terminal and switch bracket.

Standard When the shaft is not pushed in...Continuity exists

••••••No continuity when shaft is pushed in

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T0040302

★Instrument panel

preparation

Goods

tool

Roof molding remover 09070-20010 70026	For removing each part

Oils and fats Others

protective tape 53501	For preventing scratches

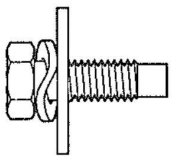
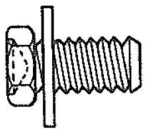
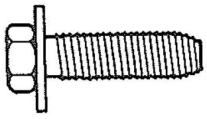
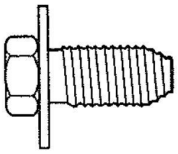
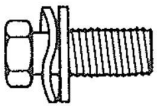
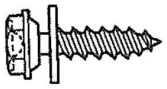
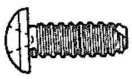
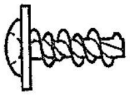
List of bolts, screws, and nuts used

(*) · Bolts and screws required for instrument panel removal/disassembly

The screws and nuts are indicated by symbols in the text and figures.

- In the figure, D indicates the nominal diameter (mm) and L indicates the length below the neck (mm).

Unit: mm

sign	形 *	sign	shape 状	sign	shape #
Ⓐ	 D=6 L-20 9011906251	Ⓑ	 D=8 L=16 9011908358	Ⓒ	 D=6 L=25 9163360625
Ⓓ	 D=8 L=20 9163550620	Ⓔ	 D=6 L=18 9165160618	Ⓕ	 D=5 L=20 9015950267
Ⓖ	 D=5 L-15 9016450034	Ⓗ	D=5 L=12 9331916012	Ⓘ	 D=4.5 L=12 #355614512
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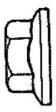
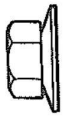
Ⓜ	 D= 6 9017906508	Ⓝ	 D= 6 9017906097		

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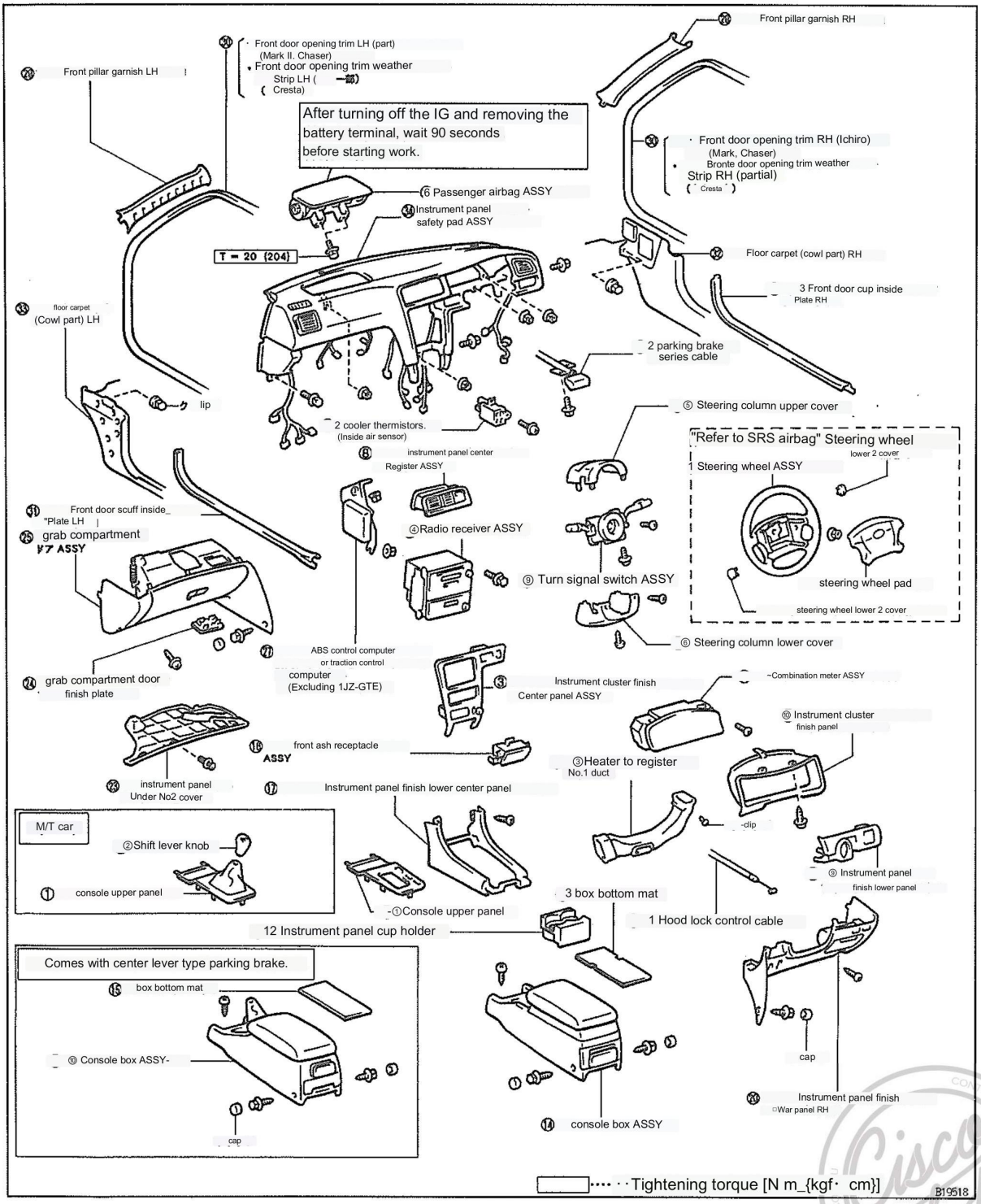
T0040393

★Instrument panel

★Detachment configuration diagram

〈参考〉 The numbers given to the part names are examples of installation and removal procedures.



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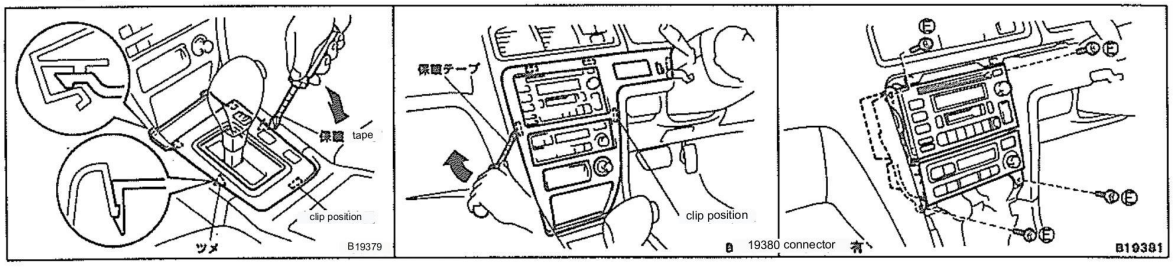
★Instrument panel safety pad

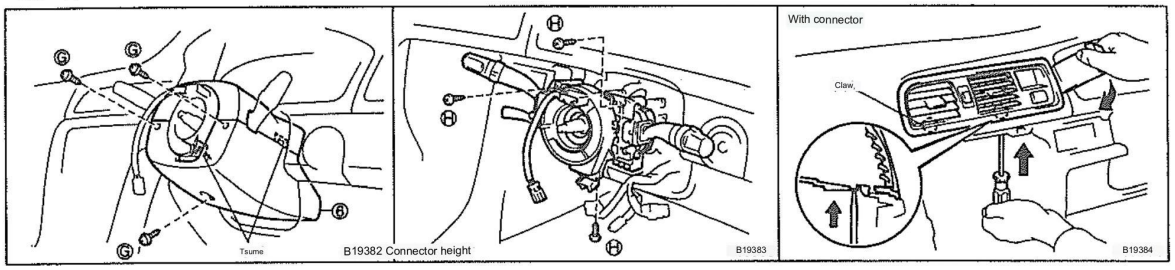
ASSY removal

・ When installing and removing the steering wheel ASSY (see ``SRS Airbag''), store the steering wheel pad in a flat and stable place. Also, place the pad side up and never place anything on top of it.

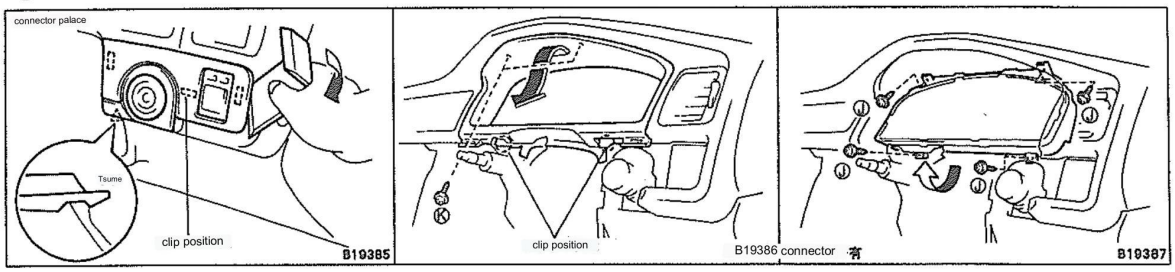
1, [② (Shift lever knob theory for M/T cars)] ③ ④



⑤, ⑥ ⑦ ⑧



⑨ ⑩ ⑪



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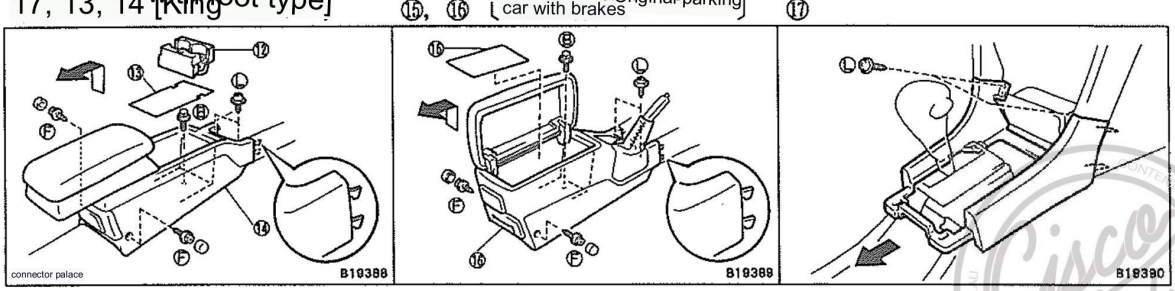
17, 13, 14 [King with foot type] ⑮, ⑯ "Center lever type parking car with brakes [Original parking]" ⑰



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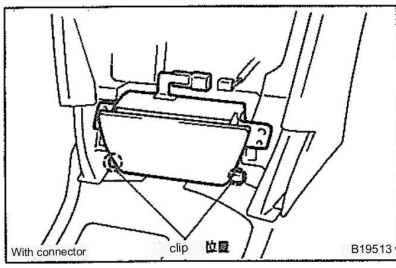
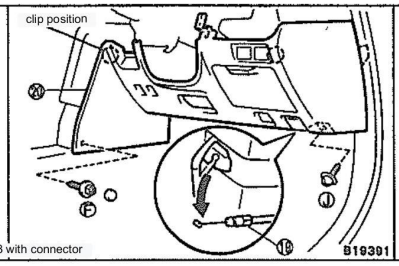


⑲, ⑳



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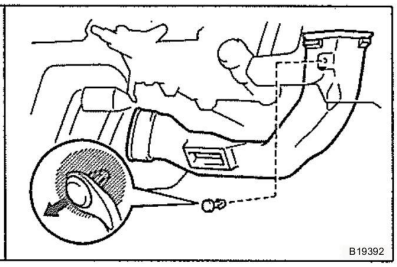

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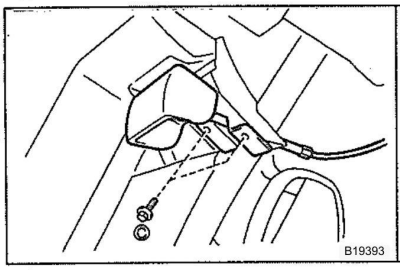

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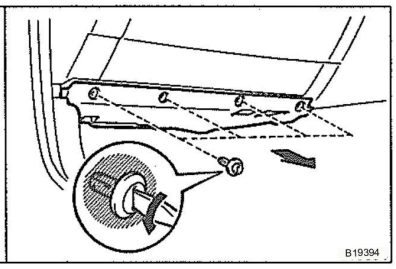
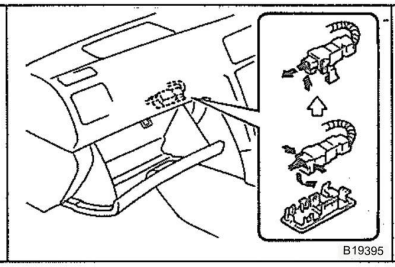


2-1

To remove the passenger airbag ASSY, wait 90 seconds after removing the IG-OFF battery terminal before starting work.

24-2



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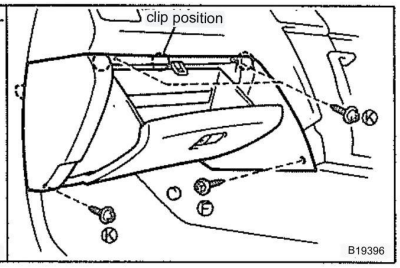

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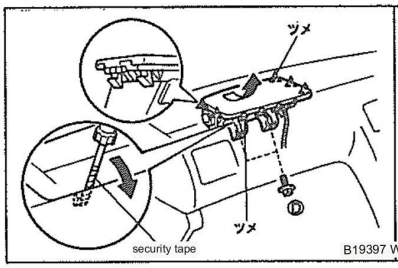
2 [Excluding 1JZ-GTE equipped vehicles]



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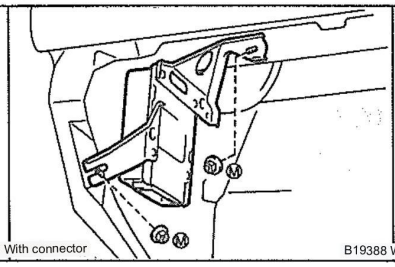

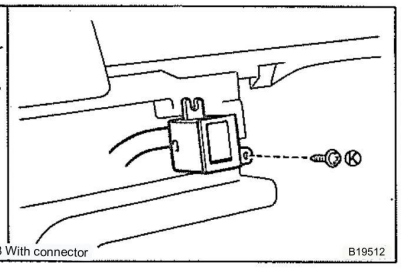

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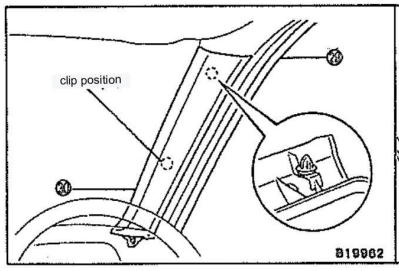

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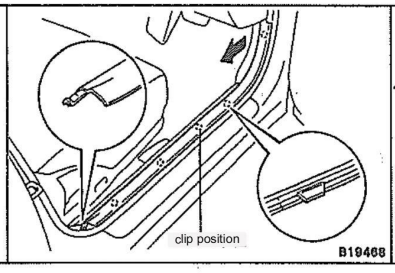

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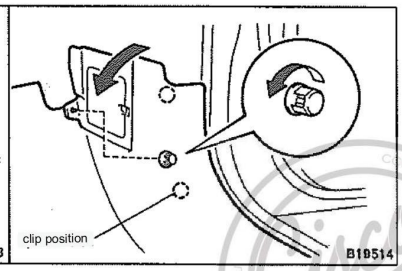

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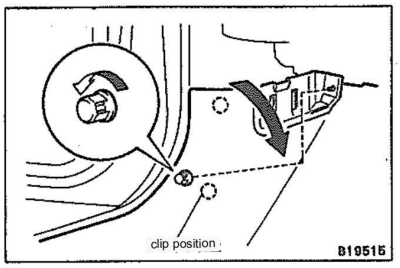

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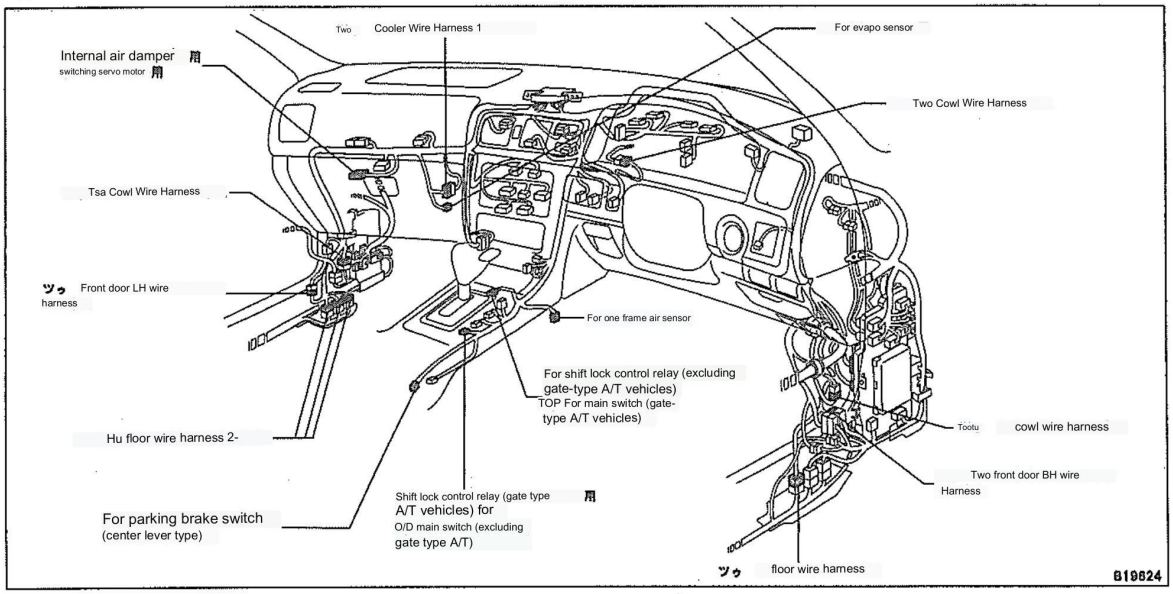

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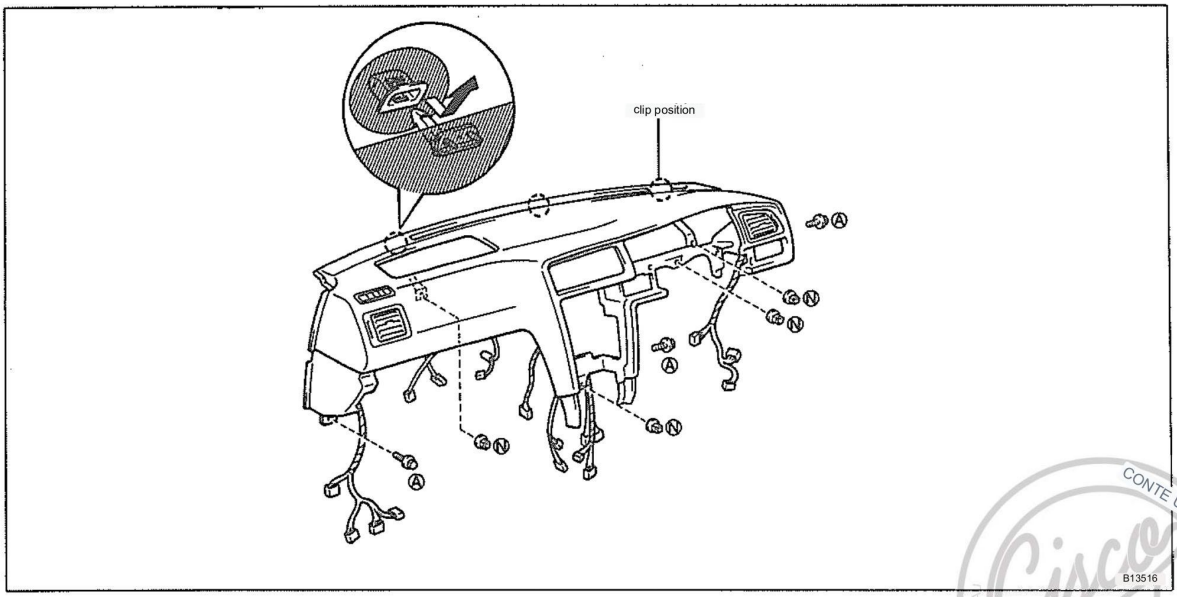

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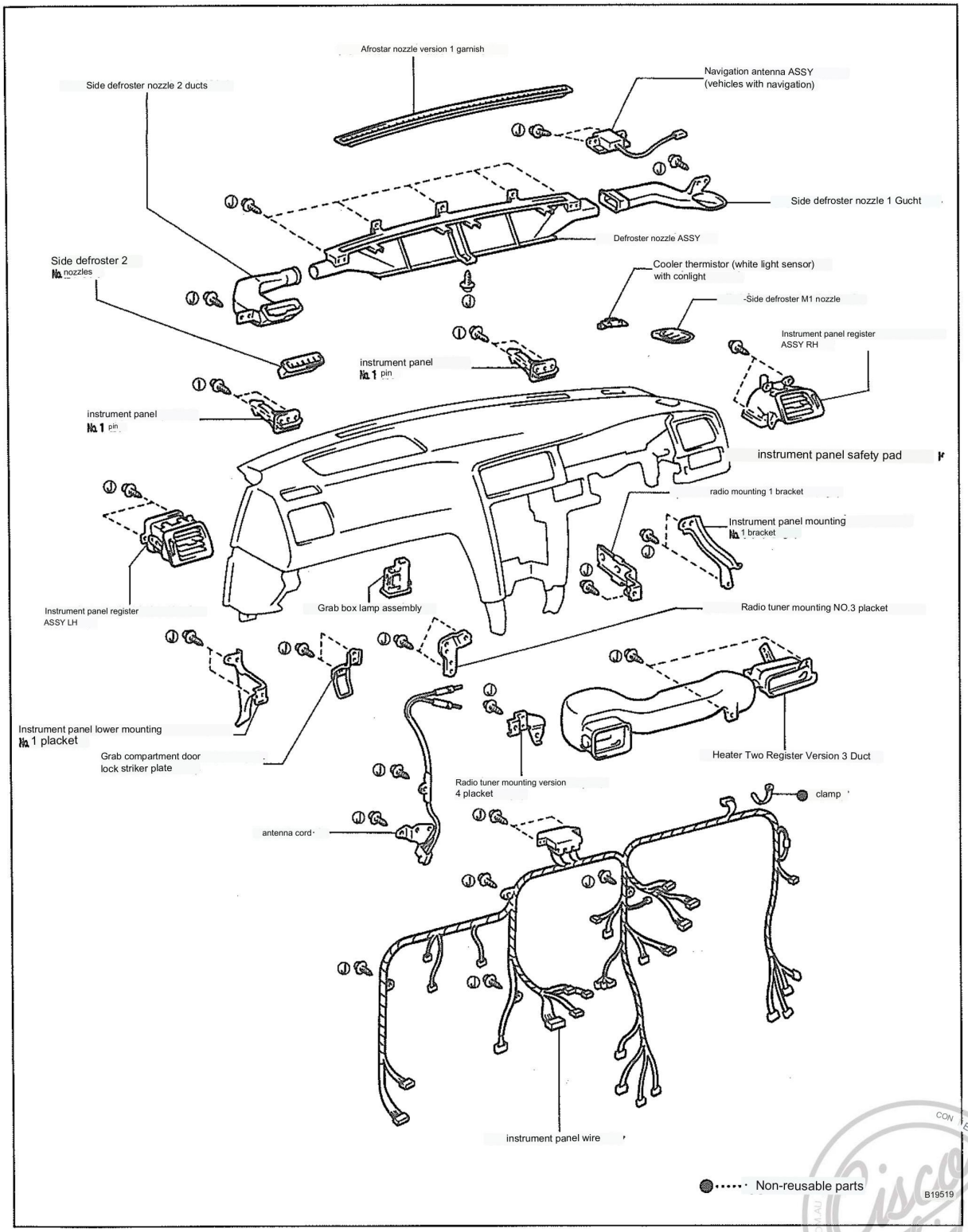
Exploded configuration diagram



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T0040751

roof headlining

Preparation items

tool

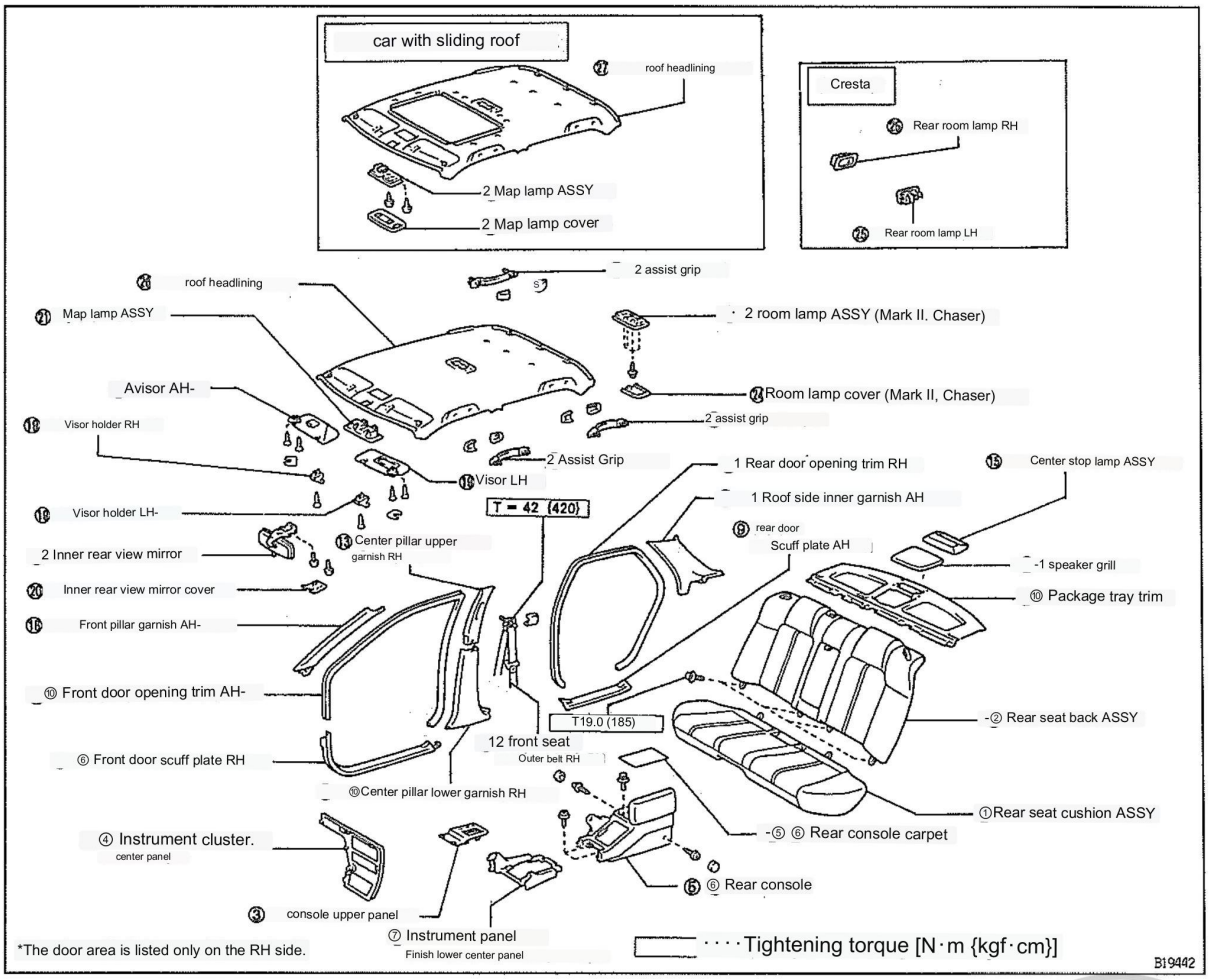
Roof molding remover 09070-20010	70028	cover removal

T0040762

roof headlining

De-tanning configuration diagram

〈参考〉 The numbers given to the part names are examples of installation and removal procedures.



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Roof headlining removal

<reference> Remove it by following the steps below. Also, installation is the reverse of removal.

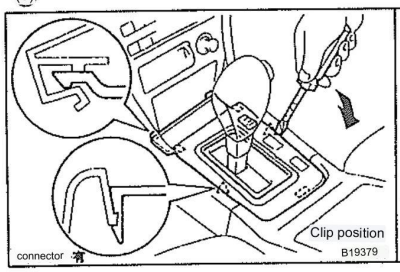
Install according to the steps.

① Removal of rear seat cushion ASSY

② Rear seat back ASSY removal

(Refer to "Seat" - "Rear seat removal/removal configuration diagram")

③



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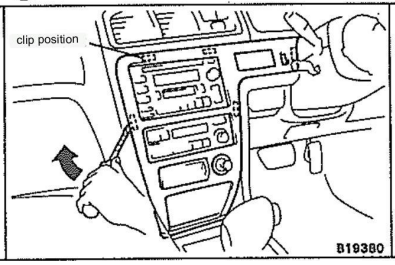
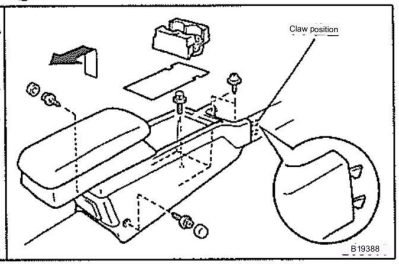


⑤ Cars with cup holders



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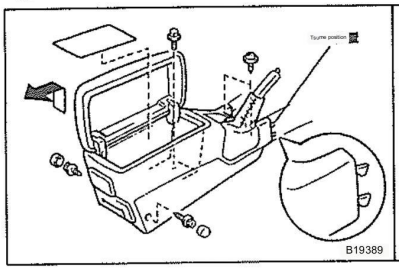

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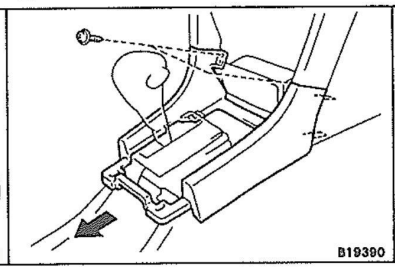
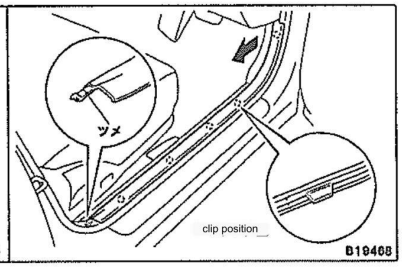
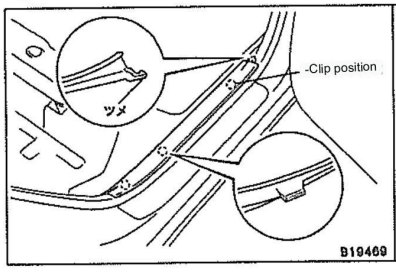


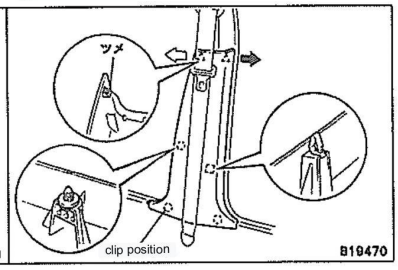
⑧ RH and LH



⑨ RH and LH



10RH and LH

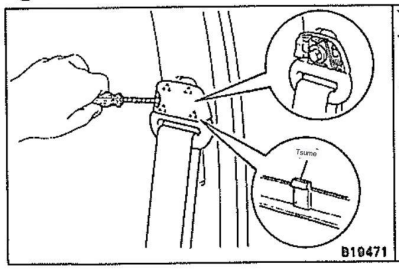


11 Front & Rear Opening Trim

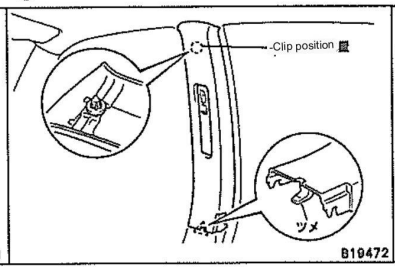
RH and LH

Non-drying sealer is applied so it will not stain the interior.

12 RH and LH



13RH and LH



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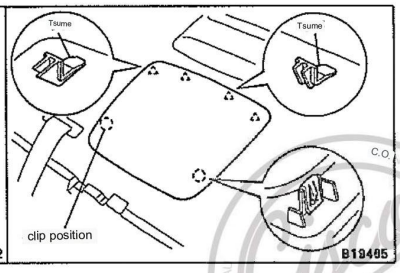

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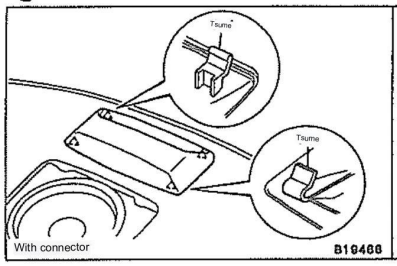

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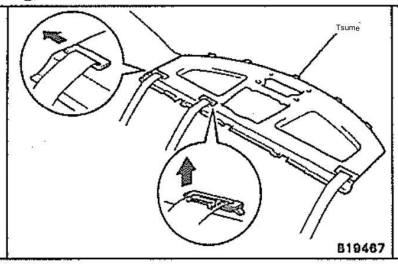
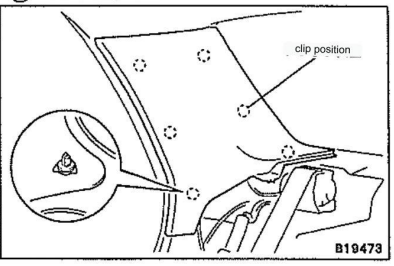
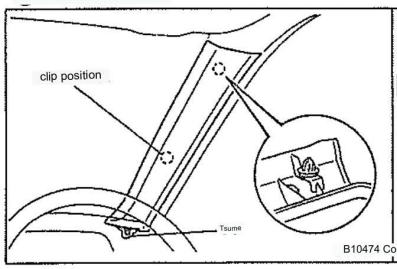


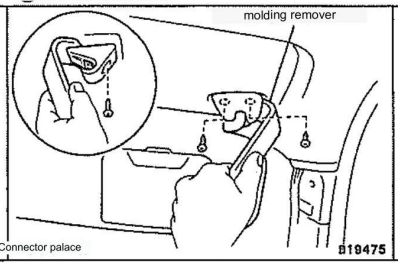
⑩ RH and LH



18 RH and LH



19 RH and LH



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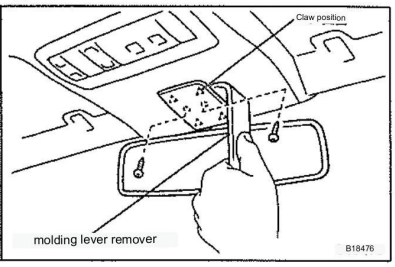
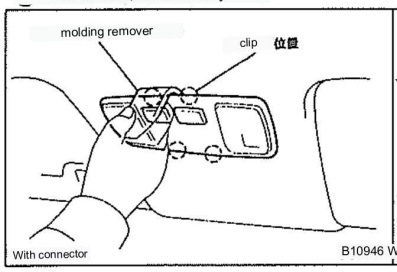
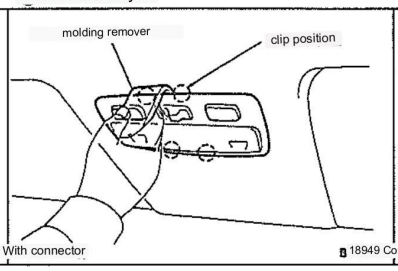


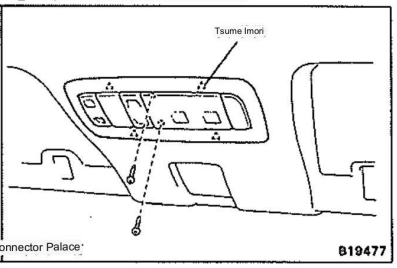
21 Mark II, Chaser only



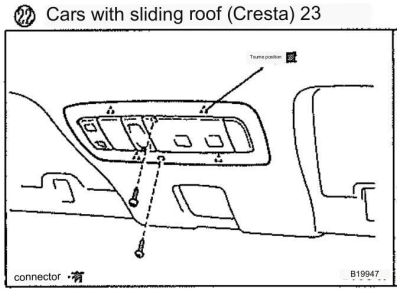
2 Cresta only



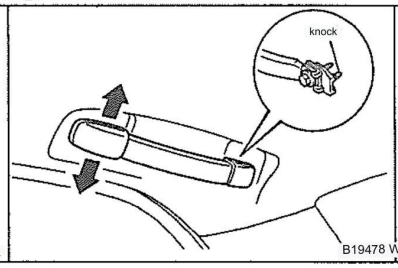
㉒ Car with sliding roof (Mark II, Chaser)



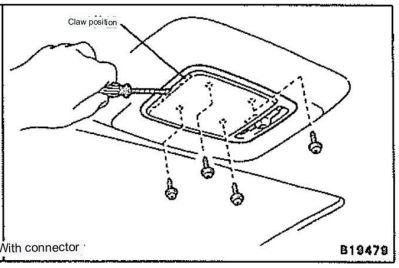
㉒ Cars with sliding roof (Cresta) 23



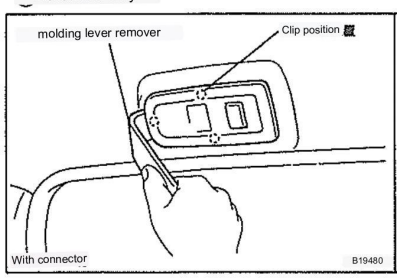
RH (rear side) and LH (front, rear side)



2 Mark II. Chaser only



25 Cresta only



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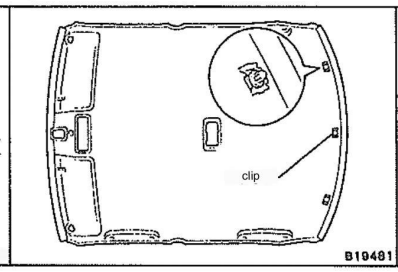
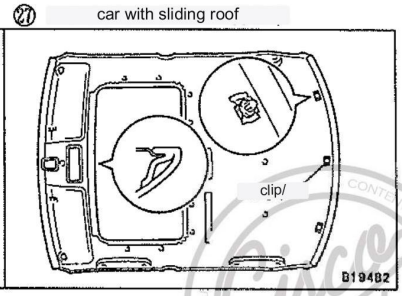


㉗ car with sliding roof



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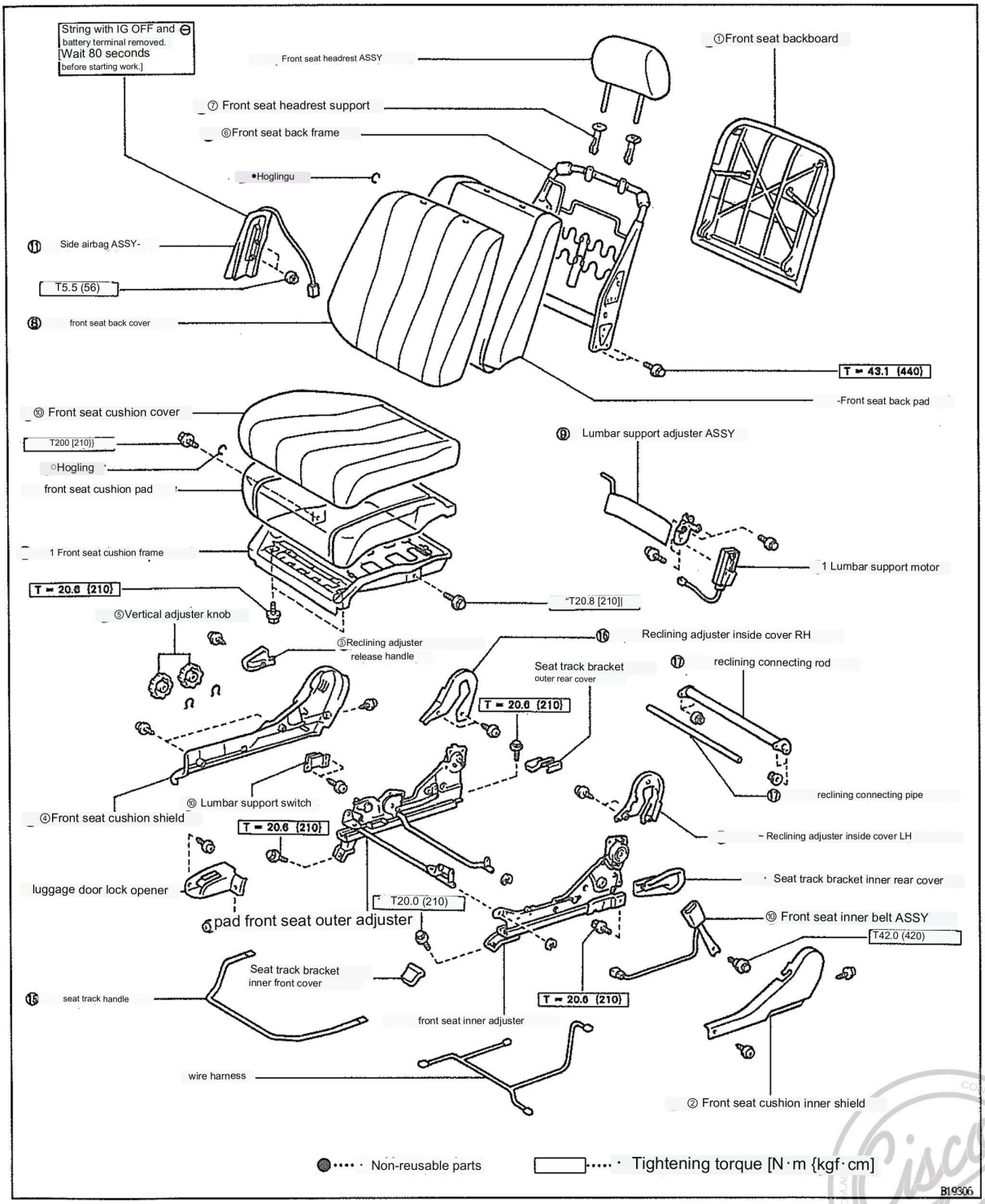
T0049813

★Front manual seat

★Detachment and disassembly configuration diagram

<Reference> The numbers given to the part names are examples of disassembly procedures.



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steamed noodles
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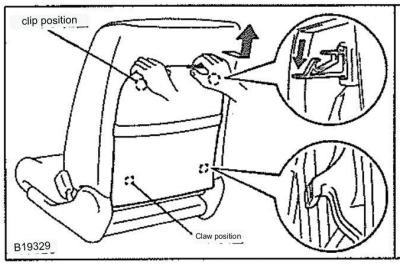
★Front seat disassembly

CAUTION - When removing the seat ASSY, wait 90 seconds after turning off the IG and removing the battery terminal.

- Cut and remove all hog rings. Disassemble

〈参考〉 using the following steps. Also, assemble by reversing the disassembly procedure.

① Car with backboard



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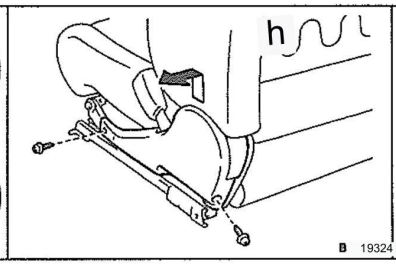

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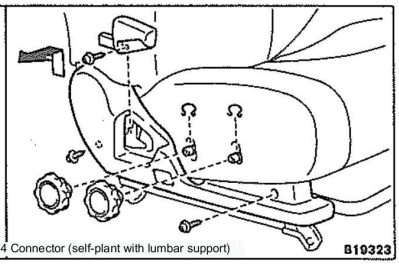

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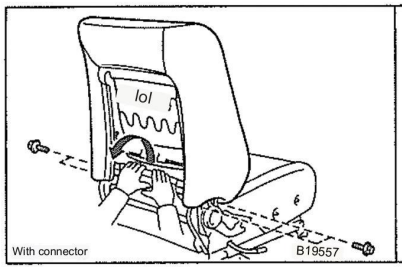

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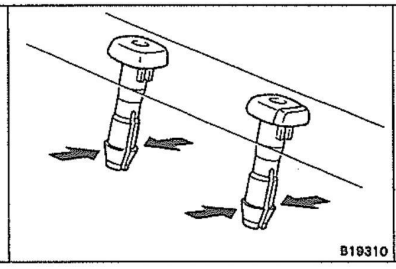

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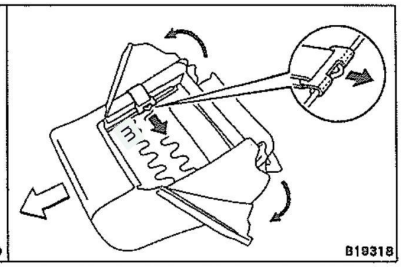
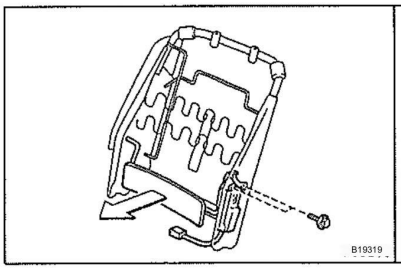


⑨, ⑩ car with lumbar support



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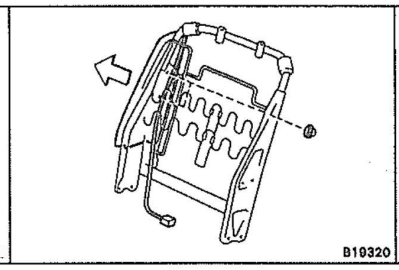

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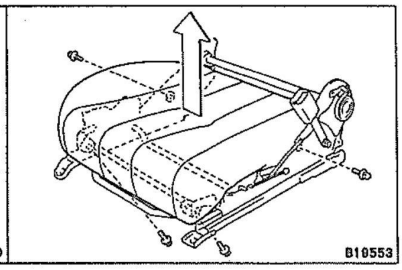

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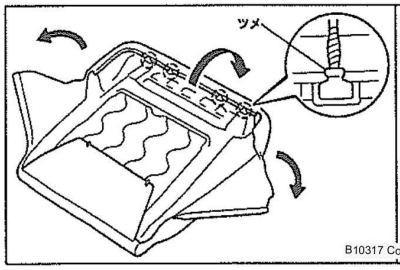

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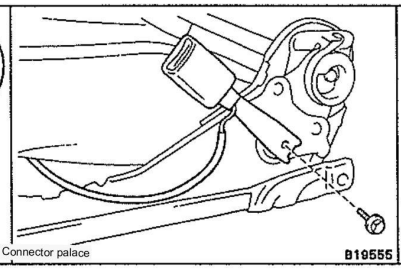
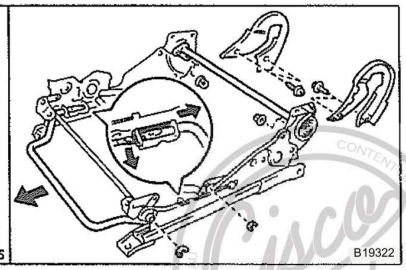


⑮, ⑯, ⑰



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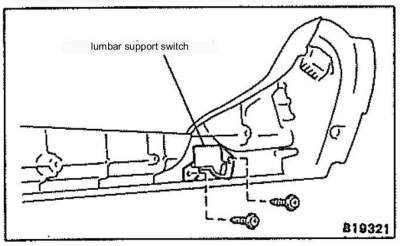
⑩ Vehicles with lumbar support



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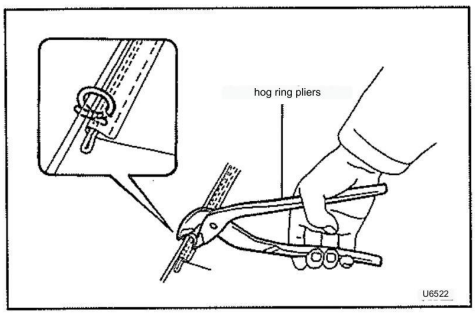


Points to note during assembly work

1 Installing the front seat back cover If

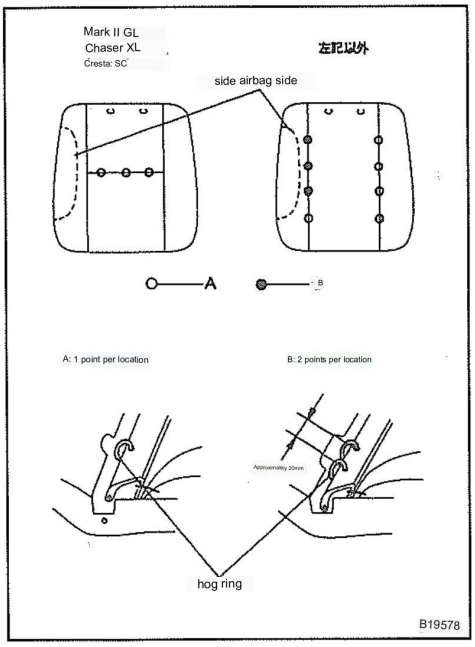
Note the seat back cover is not installed securely, the airbag may

There is a risk that the file will not deploy properly, so please comply with the following steps. (1) Hog ring for seat cover installation is

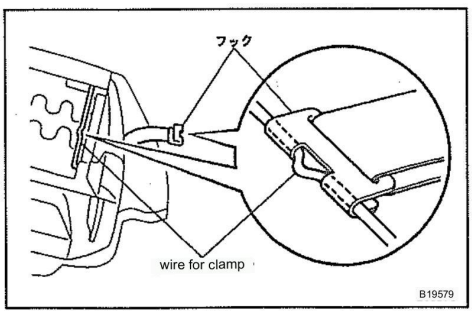
Attach to avoid wrinkles as much as possible.

注意 After assembly, do not stain or damage the seat cover.

Hog ring pliers Tool 09130-00160... Hog ring pliers



(2) Attach the hog ring on the seat back in the position shown in the illustration.



(3) Clamp the cover hook to the frame in the position shown in the

注意 illustration. Attach until you hear a “click” sound.

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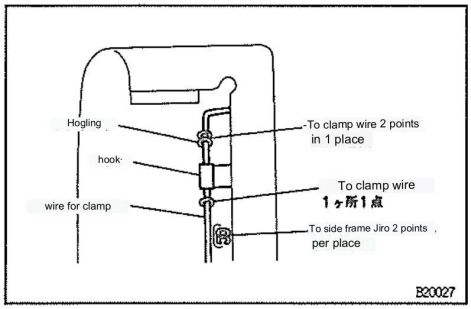
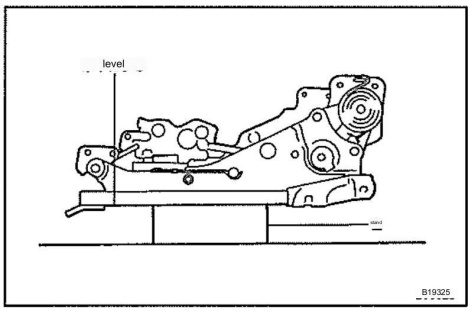


(4) Attach the cover wire to the frame in the position shown in the illustration using a hog ring.

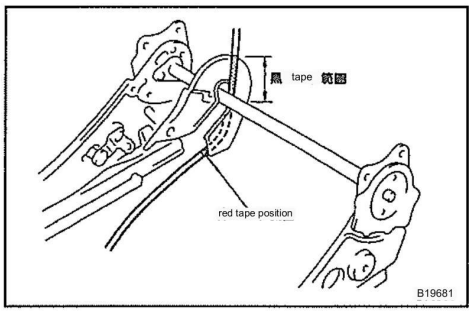


2 Installing the front seat adjuster

(1) Set the left and right slides to the front most position.

(2) Place the adjuster on a stand etc. to make the seat rails parallel, and then Install the cutting pipe.

注意 If you lift the adjuster and attach the connecting vibrator, the synchronization position will shift and a locking failure will occur.



3 Wire harness installation

(1) When installing the adjuster inside cover, the side airbag Attach the wiring harness as shown in the illustration.

4 Installing the front seat back frame · Temporarily tighten the four bolts, and then attach the front seat back frame to the outer side of the driver's seat or Fully tighten from the front of the inner side.

5 Inspection of reclining synchronization

(1) When operating the recliner, the left and right adjusters will move at the same time. Check that it is released.

(2) If the reclining is out of sync, disassemble the seat and adjust it. Arrange.

Points to note during installation work

1 front seat installation

(1) Place the seat in the front most position.

注意 Make sure it's locked.

(2) Set the seat track in the vehicle without holding the handle.

注意 The slide synchronization position shifts when you hold the seat track handle.

(3) Temporarily tighten the bolts on the rear side, and then fully tighten them from the inner side.

(4) Move the seat to the rear most position and install the front side bolts.

Caution Make sure it is locked.

2 Slide and reclining synchronization check

(1) When operating the slide and recline, check that the left and right adjusters lock at the same time.

(2) If the slides are out of sync, loosen the seat fixing bolts. Adjust. (3) If the reclining is out of sync, disassemble the seat and adjust Arrange.

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★フロントパワーシート

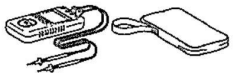
preparation

Goods

tool

	09130-00160	hog ring pliers	For hog ring attachment

計 器

	09082-00030	toyota electrical tester	Each part is for use as a pointer.
	(09083-00060)	三二于メトリ-F	For inspection of each part

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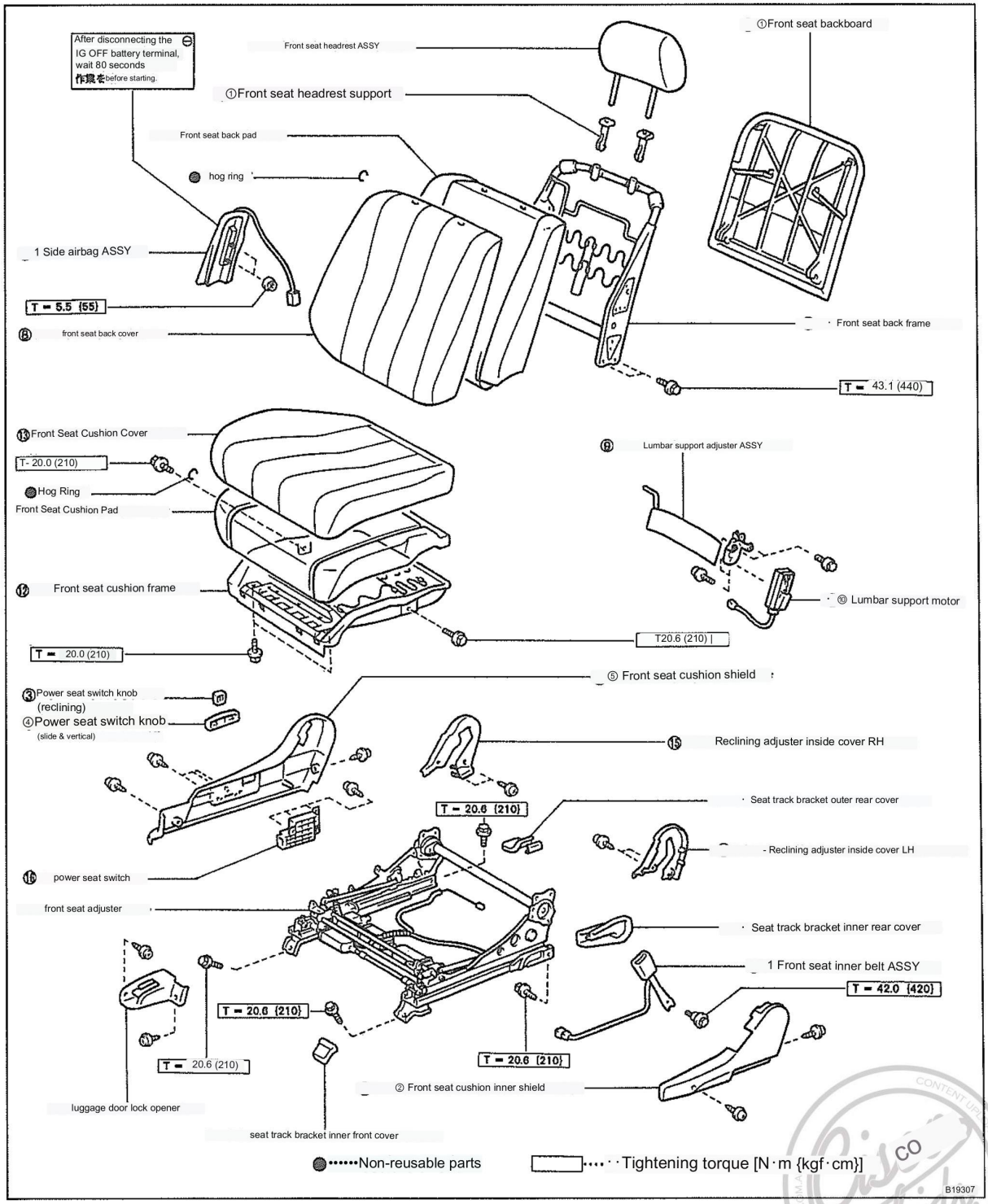
T0042818

★Front power seat

★Detachment and disassembly configuration diagram

<reference> The numbers given to the part names are examples of disassembly procedures.



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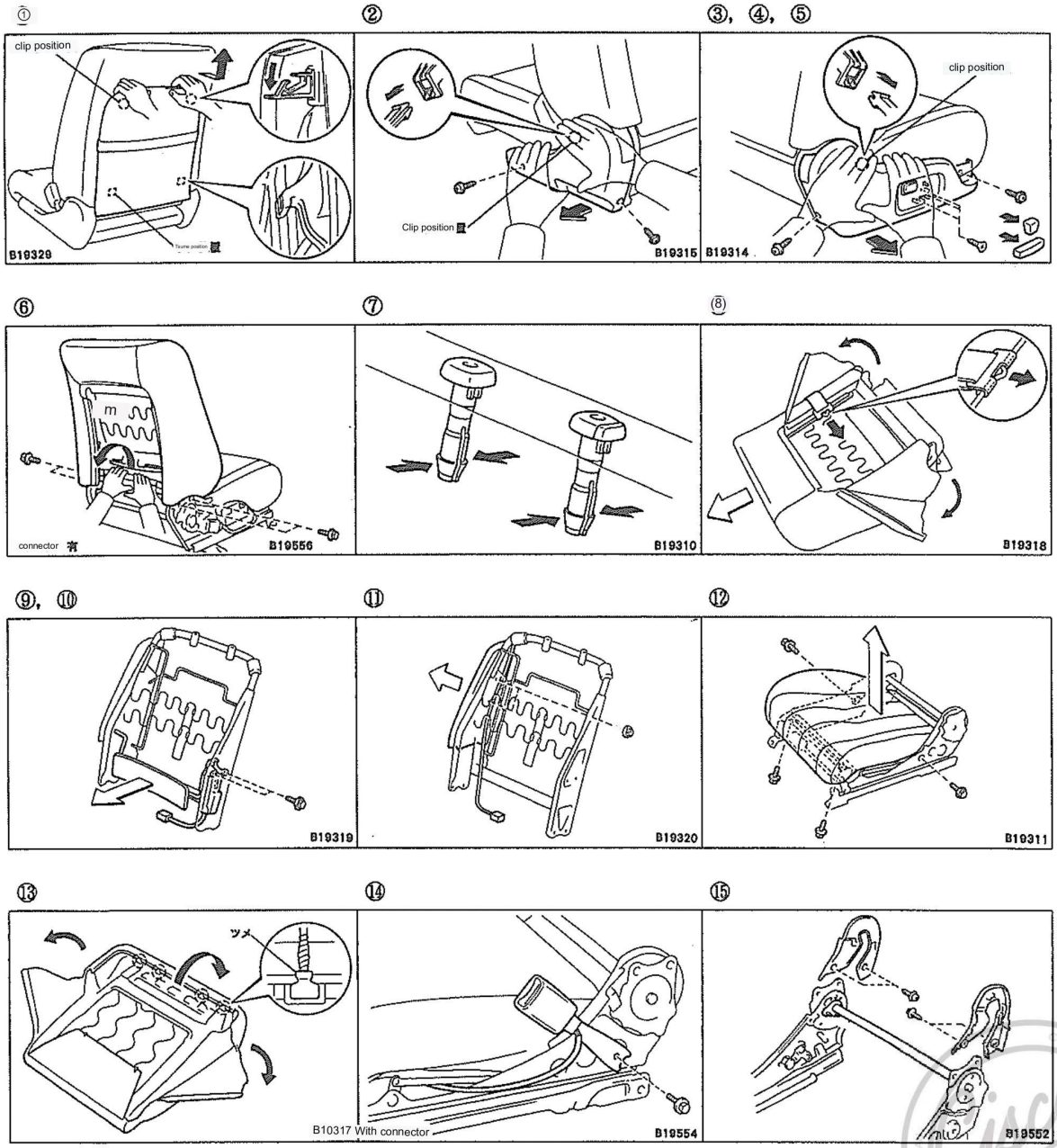
★Front power seat disassembly

Note · When removing the seat ASSY, wait 90 seconds after turning off the IG and removing the battery terminal.· Set the slide to the front most position, the front vertical to the highest position, and the rear vertical to the lowest position. - Cut and remove all hog rings.

<Reference> Disassemble using the following steps. Also, assemble by reversing the disassembly procedure.

Find it.



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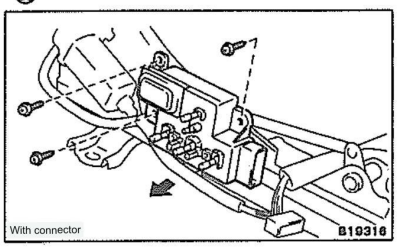

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Points to note during assembly work

1 Installing the front seat back cover

2 Wire harness installation

3 For front seat back frame installation

(1~3), refer to "Front manual seat" - "Notes on assembly work")

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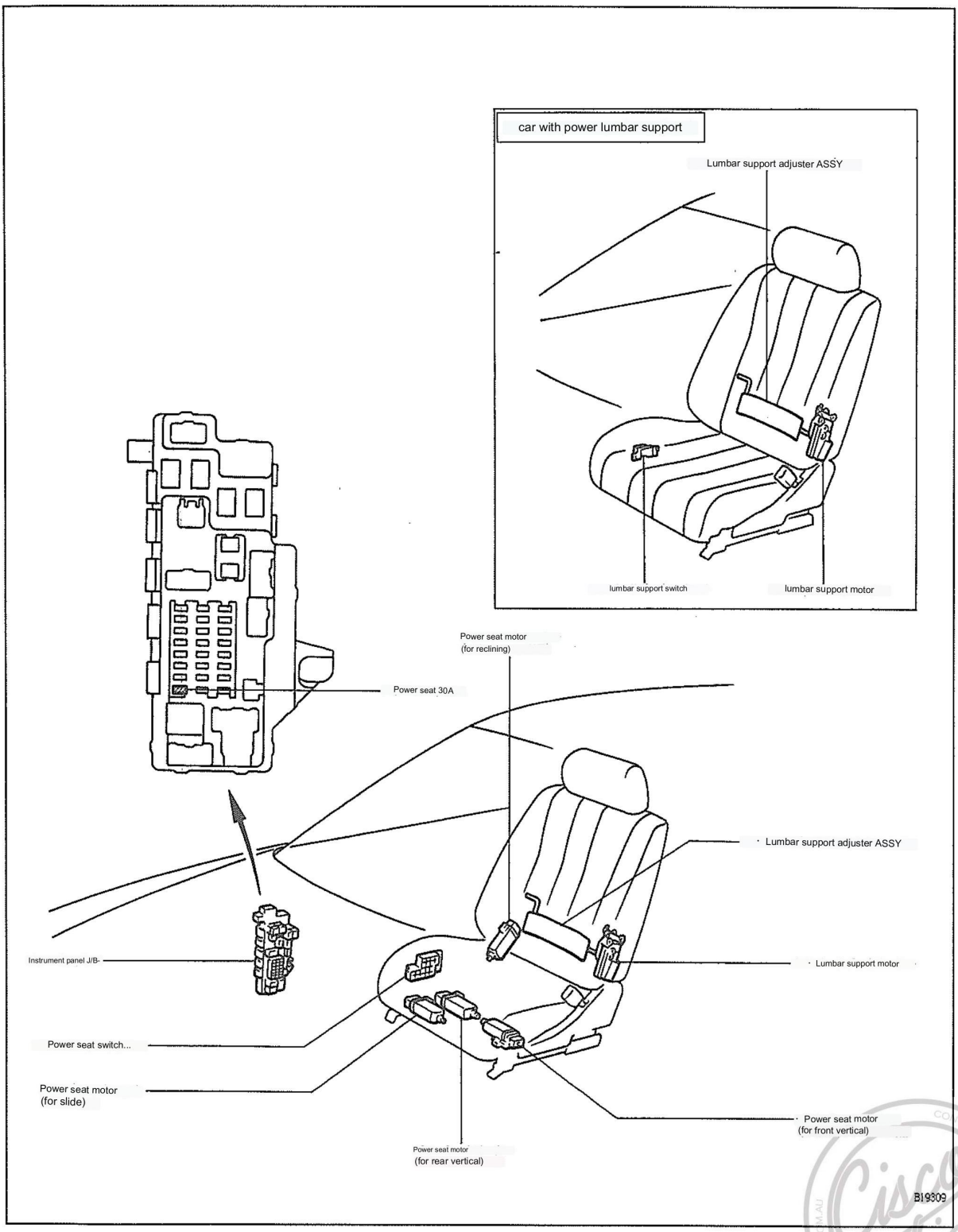
Parts layout diagram



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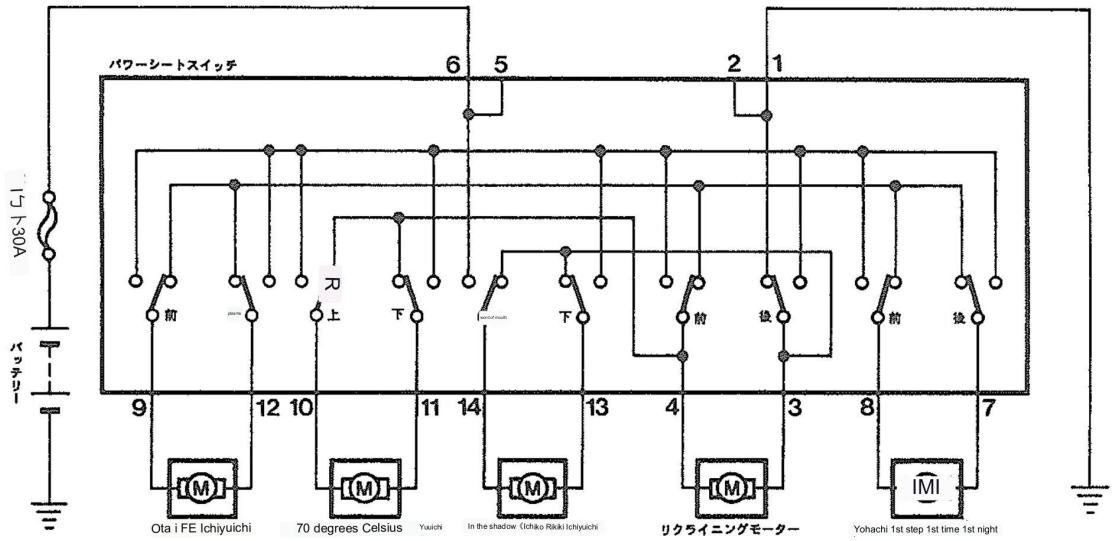
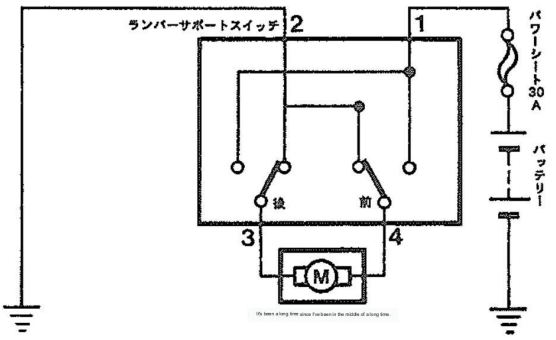
TC04DB16

circuit figure

パ Door－－ lower car



ノ Car with door number 181



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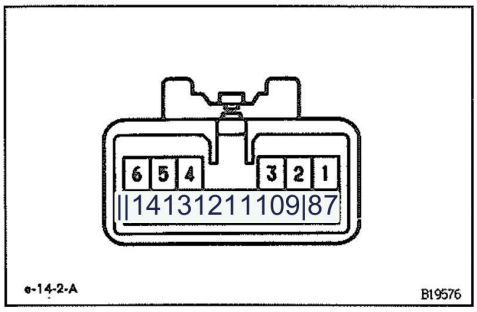

Individual inspection

power seat switch

1 Continuity check

(1) Check continuity between each terminal while operating each switch.

standard ○○ Yes

switching	ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14
slide switch	FR	○	○			○	○			○			○		
	OFF	○	○							○			○		
	RR	○	○							○			○		
front vertical switch	UP	○	○								○	○			
	OFF	○	○								○	○			
	DOWN	○	○			○	○				○	○			
リヤ vertical switch	UP	○	○			○	○						○		○
	OFF	○	○											○	○
	DOWN	○	○			○	○						○		○
recliner switch	FR	○	○	○	○	○	○								
	OFF	○	○	○	○										
	RR	○	○	○	○	○	○								
lumbar support switch	FR	○	○			○	○	○	○						
	OFF	○	○					○	○						
	RR	○	○		○	○	○		○						

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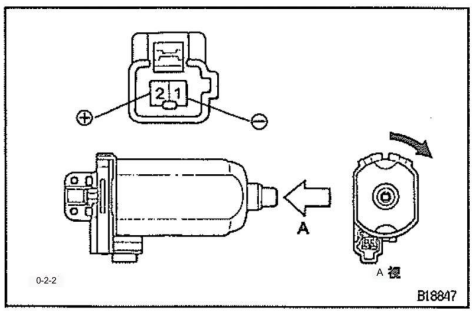

power seat motor

1 Operation check

注意 Inspect the front seat adjuster while it is assembled.

Ru.

(1) When the battery is connected to the connector terminal as shown in the figure on the left,

Check that the drive shaft rotates smoothly in the direction of the arrow. (2)

When changing the polarity of the battery, it will rotate in the opposite direction to (1).

and check.

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2 Check PTC operation inside power seat motor

注意 Inspect it while it is assembled on the vehicle.

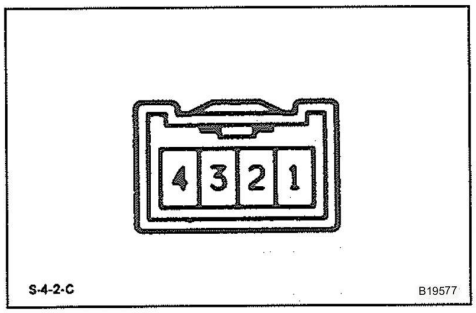
(1) Operation check

① Set the seat position to either the front or back or the top or bottom, and Wait approximately 60 seconds.

② When the power seat switch is further operated in the same direction as ①, check the time until the current is cut off (the motor operating sound stops). do.

Standard: Shuts off in about 4 to 40 seconds

③ After approximately 60 seconds of the cut-off check, operate the power seat switch in the opposite direction. Check that the motor operates when the



lumbar support switch

1 Continuity check

(1) Check continuity between each terminal while operating the switch.

standard ○○ guidance available

switching \ ID	1	2	3	4
FR	○	○	-○	○
OFF		○		○
		○	○	
RR	○	○	○	○

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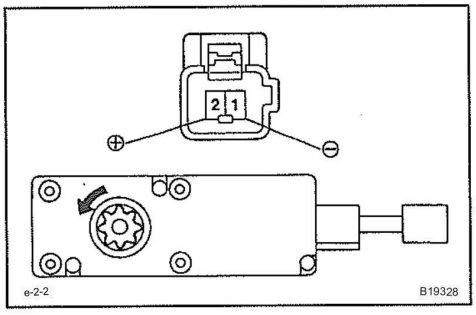

lumbar support motor

1 Operation

check (1) If the battery is connected to the connector terminal as shown in the figure below. Check that the drive shaft rotates smoothly in the direction of the arrow. (2) When changing the polarity of the battery, it will rotate in the opposite direction to (1). and check.

2 PTC operation check inside the lumbar support motor

注意 Inspect it while it is assembled on the vehicle.

(1) Operation check

① Fully set the lumbar support on either the front or the back and Wait for seconds.

② When the lumbar support switch is further operated in the same direction as ①, the time until the current is cut off (the motor operating sound stops). Inspection to.

Standard: Shuts off in about 4 to 40 seconds

After approximately 60 seconds of shutdown check, check that the motor operates when the lumbar support switch is operated in the opposite direction.

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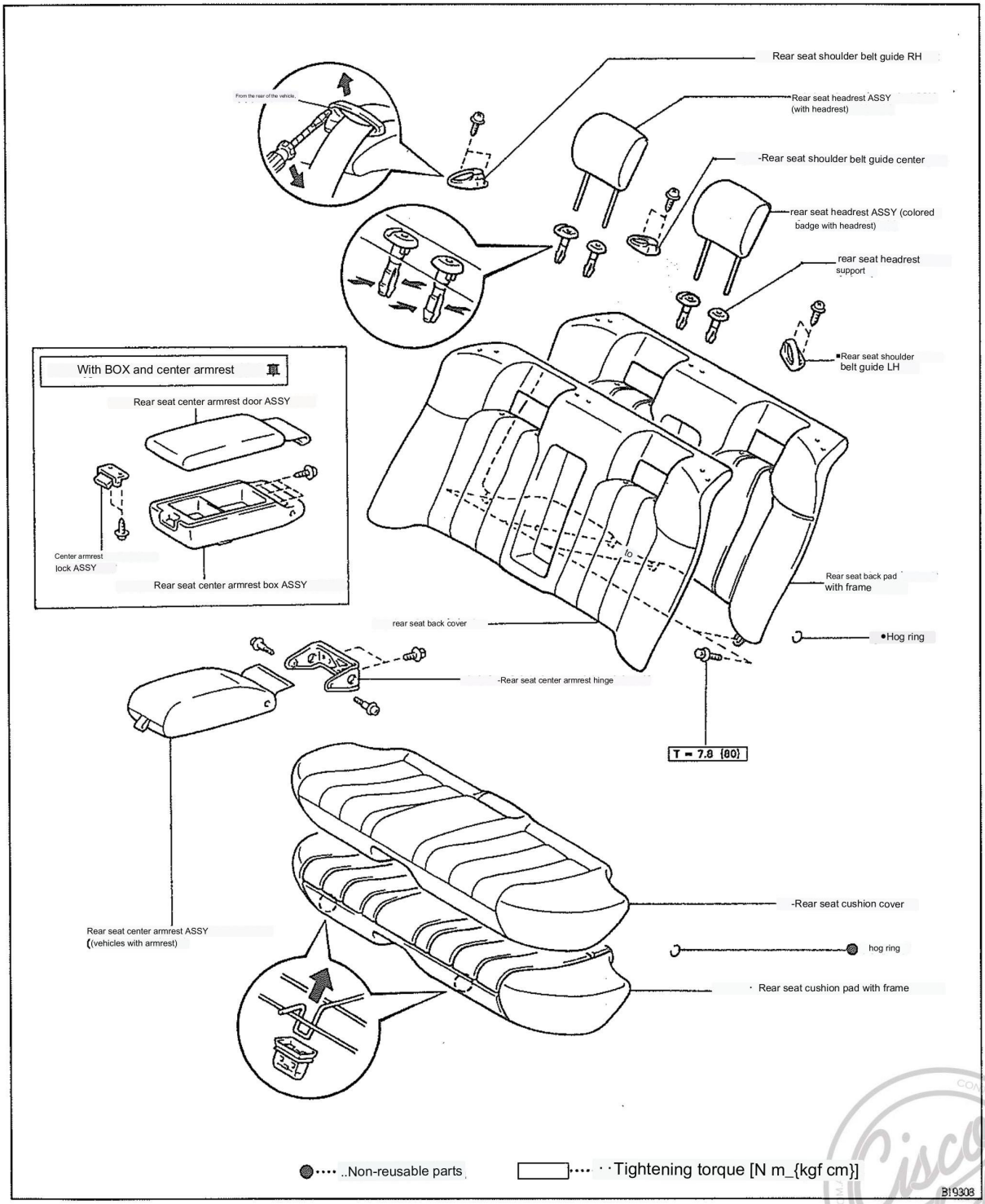
T0049522

Rear seat

disassembly diagram



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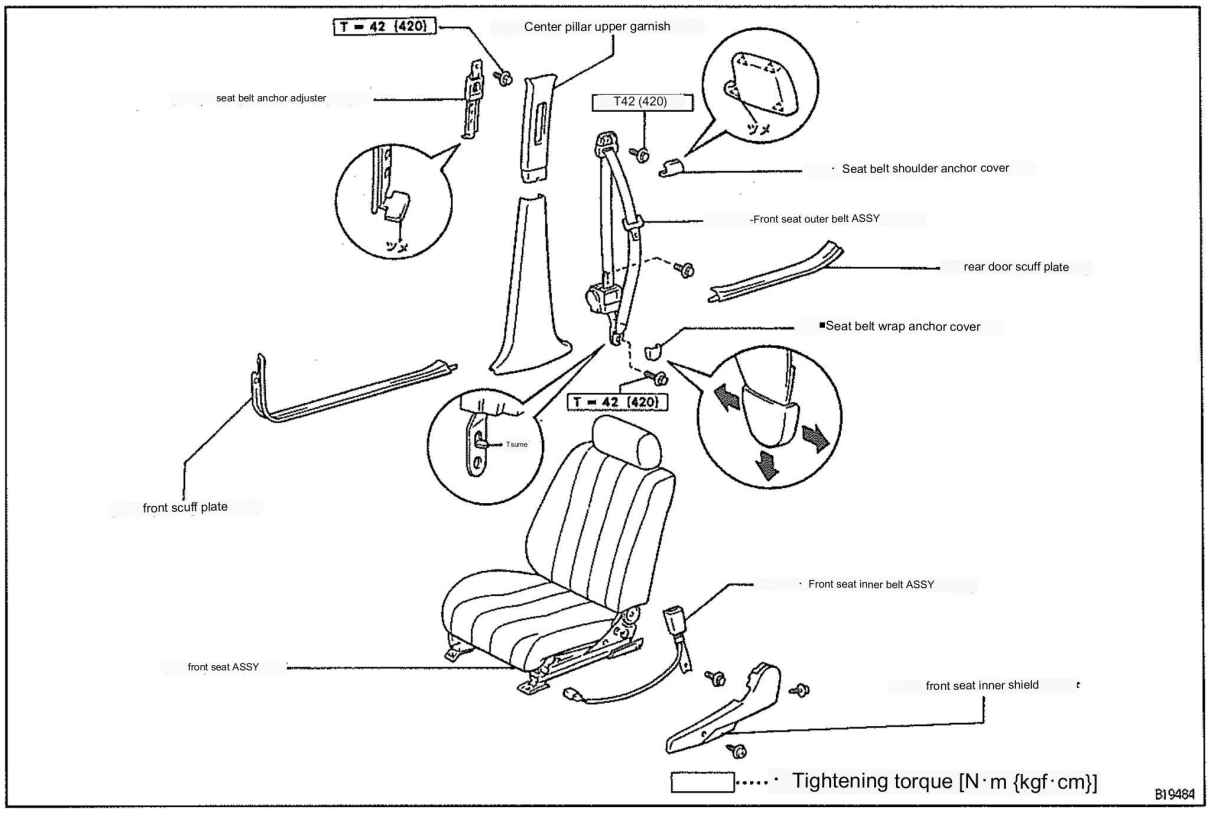
T004978-4

Front &

rear seat belt

front seat belt

Detachment configuration diagram



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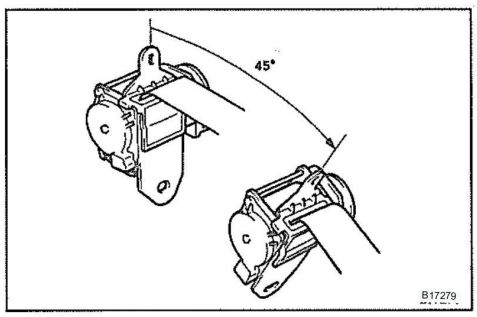
Retractor inspection



1 ELR lock start tilt angle check

- When the retractor is gently moved from the installed state, check that the belt does not lock within 15 degrees in all directions, and that it remains locked at 45 degrees or more. Kumakuma:

Do not disassemble the retractor.

2 ELR lock inspection

- Check that the belt locks when pulled out quickly with the vehicle assembled. Cisco

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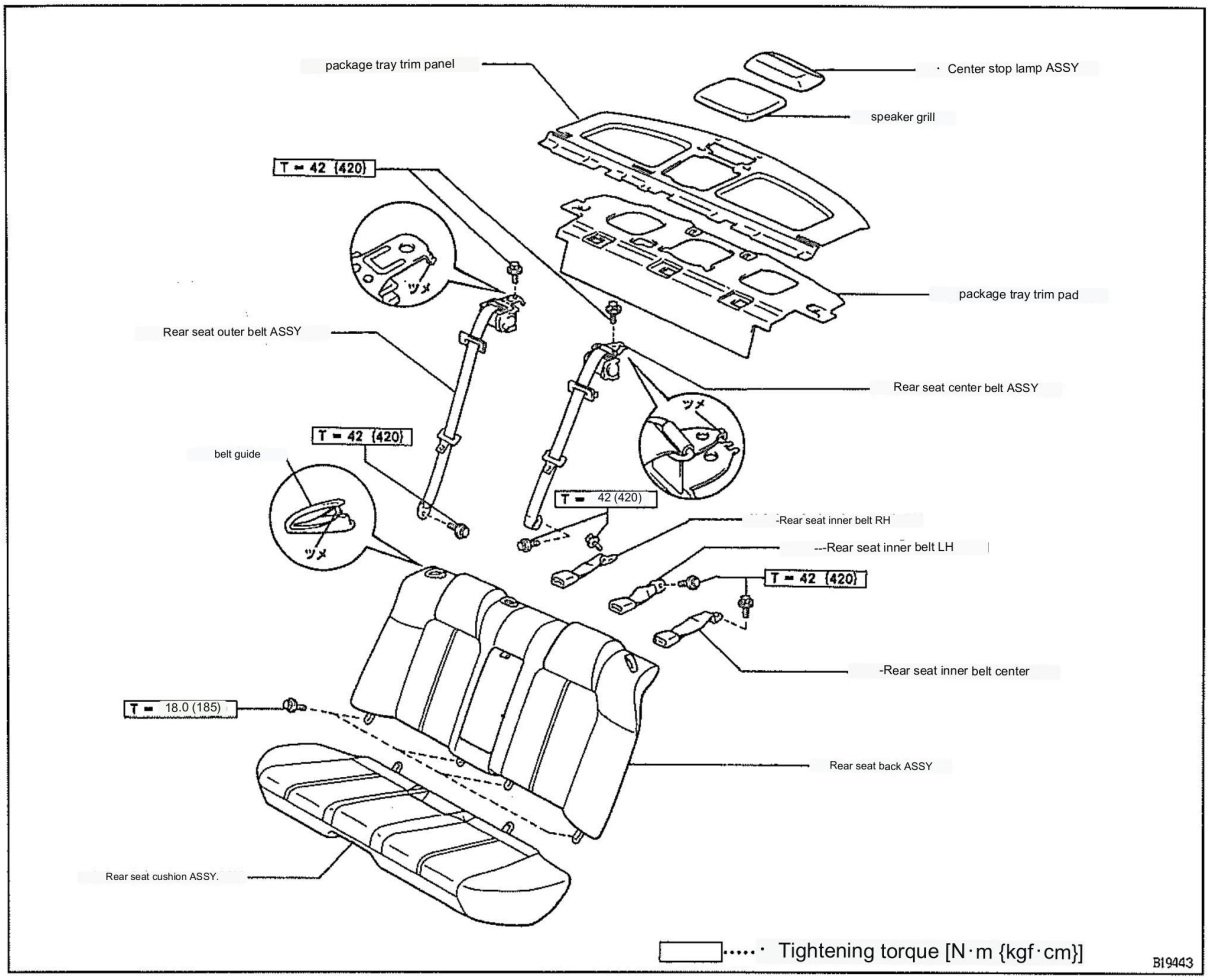
T0040765

rear seat belt

Detachment configuration diagram

When removing the belt from the belt guide, do not spread it out too much.



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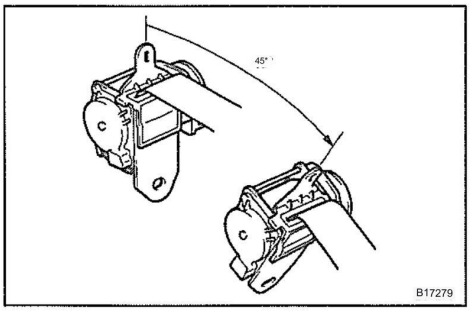

Retractor inspection

1 Inspecting the tilt angle of the ELR lock start •When the retractor is gently moved from the installed state, check that the belt does not lock within 15° in all directions, and maintains the locked state at 45° or more. Check that. Do not disassemble the retractor.

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Congratulations

2 ELR lock inspection

- When assembling the vehicle, check that the belt locks when pulled out quickly.

3 Inspecting the switching of the seat belt with a child seat fixing (Rear seat outer belt) mechanism - When assembling the vehicle, check that the belt is locked when pulled out and rewound after being fully pulled out, and that it can be pulled out again after being fully rewound.

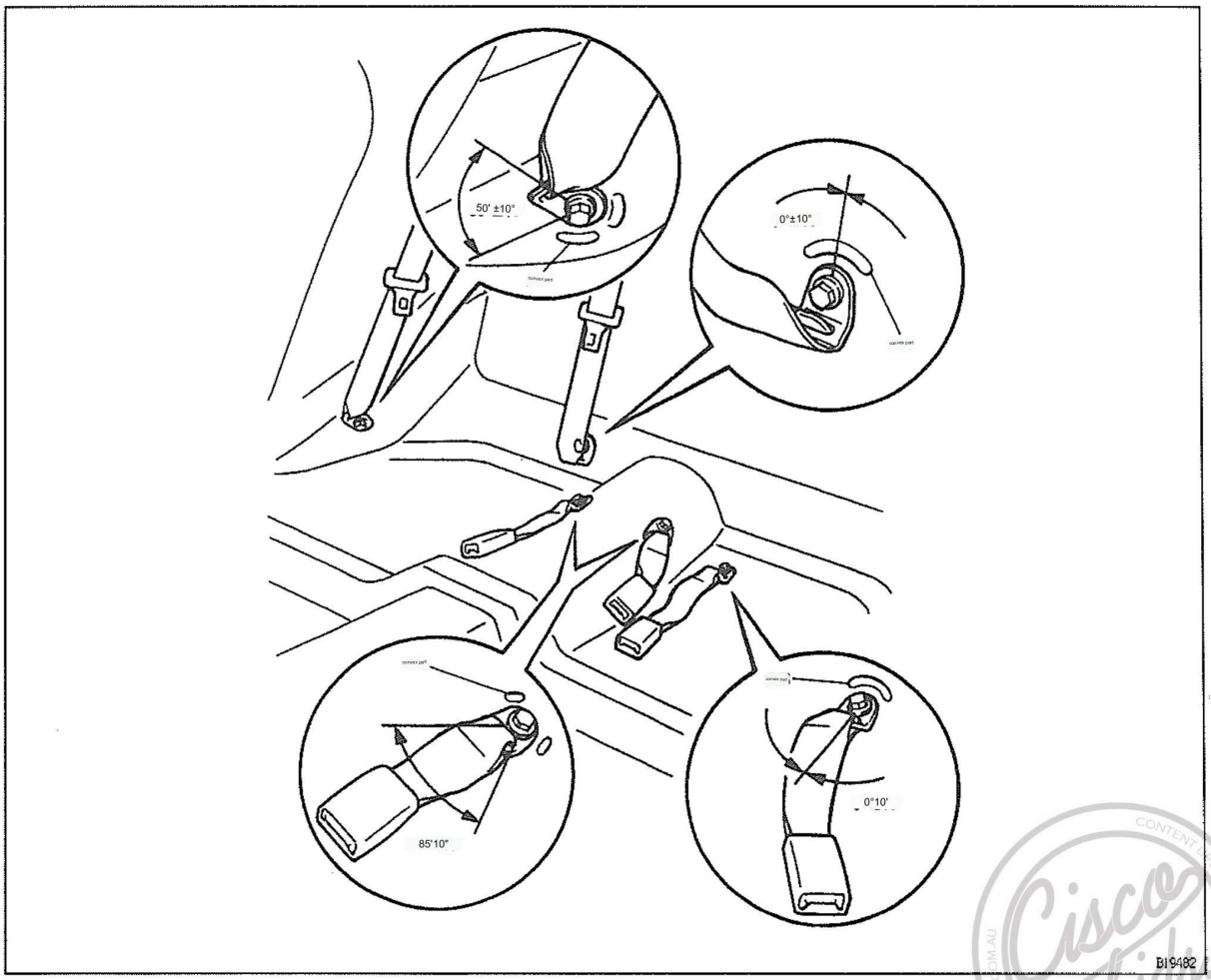
Points to note during installation work

- Attach the anchor part at the angle shown in the illustration.

· Do not let the anchor part ride on the panel protrusion.

· Each belt can be pulled out smoothly when installed, and Make sure it returns smoothly.

- Pass the inner belt through the slit in the seat cushion.



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T0040768

Electric tension reducer

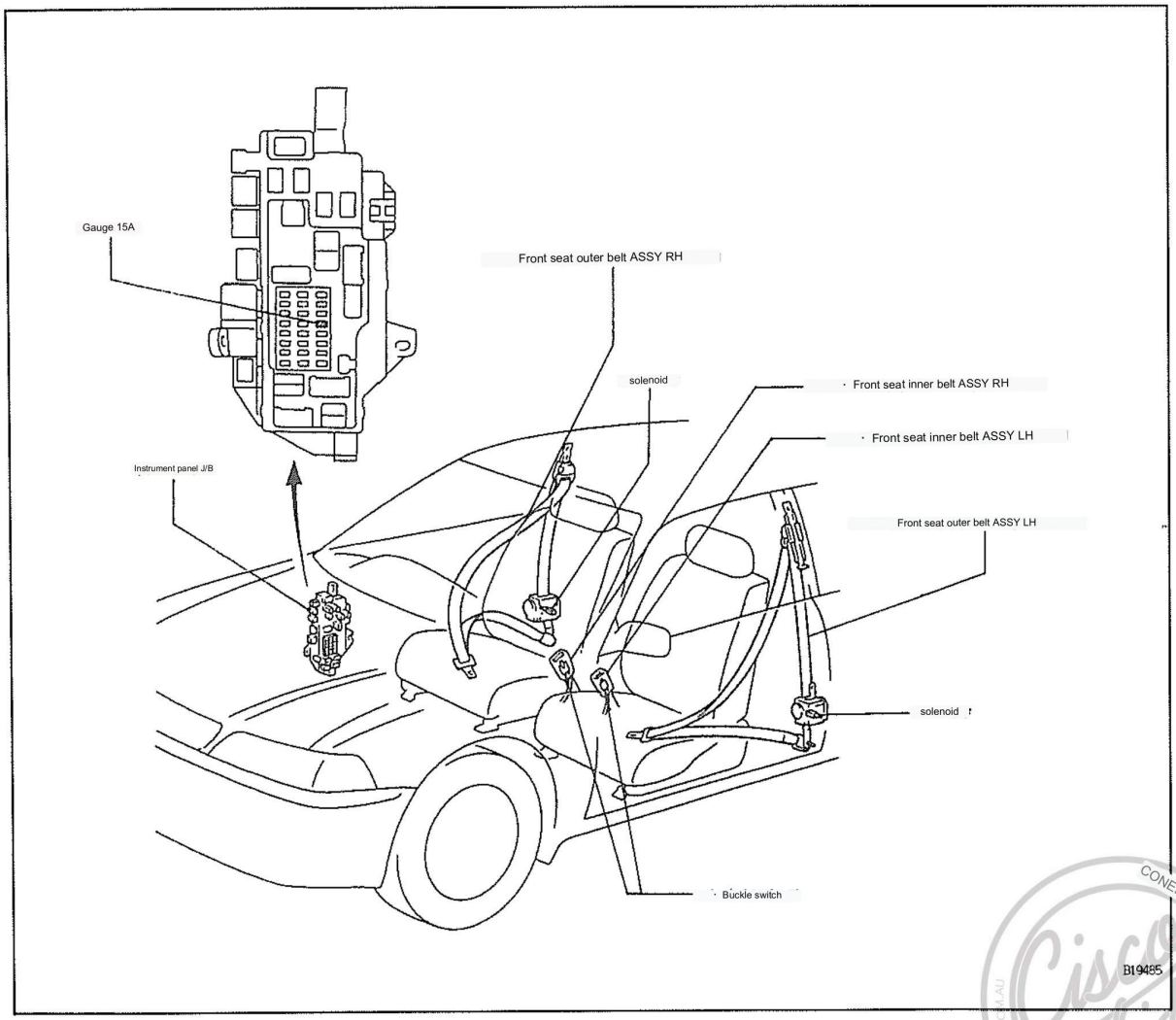
preparation

Goods

	09082-00030	toyota electrical tester	For single point
	09083-00150	test lead set	For single body point

T0049737

Parts layout diagram



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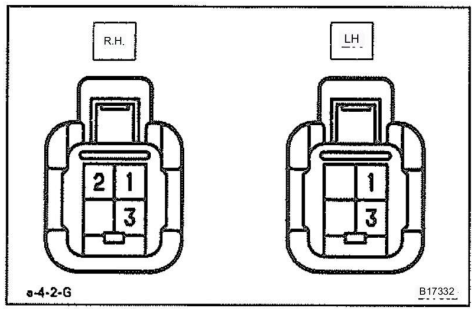


TOD40750

Individual inspection

front seat inner belt

1 Buckle switch continuity check

(1) Check continuity between each terminal when inserting the outer belt plate into the buckle.

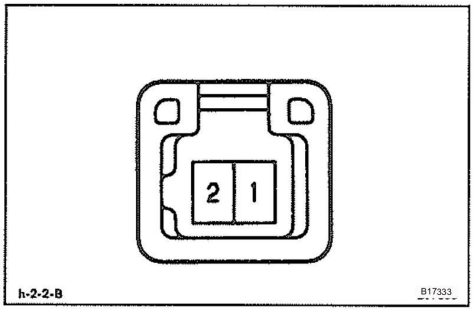
standard

R.H.

When connected	13 terminals	With continuity
	23 terminals	No continuity
When disconnecting	13 terminals	No continuity
	23 terminals	With continuity

LH

When connected	13 terminals	With guidance
When disconnecting	13 terminals	No continuity



front seat outer belt

1 Checking the operation of the electric tension reducer (1)

When connecting ④ of the battery to the 1st terminal of the connector and ④ of the battery to ⊖ the 2nd terminal of the connector, check the operation sound of the solenoid being magnetized and the plunger being attracted.

(2) Check that the take-up spring force increases when the seat belt is pulled out and the battery terminal is disconnected.

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T0048623

Installation adjustment

preparation

Goods

SST

	09812-00010	door hinge set bolt wrench	For front door installation adjustment

Oils and fats Others

ボデーシーラー 52401	[Ning－-5-For crack repair
Evening is 18㇀lower (one color) 51101	For repairing peeling paint parts

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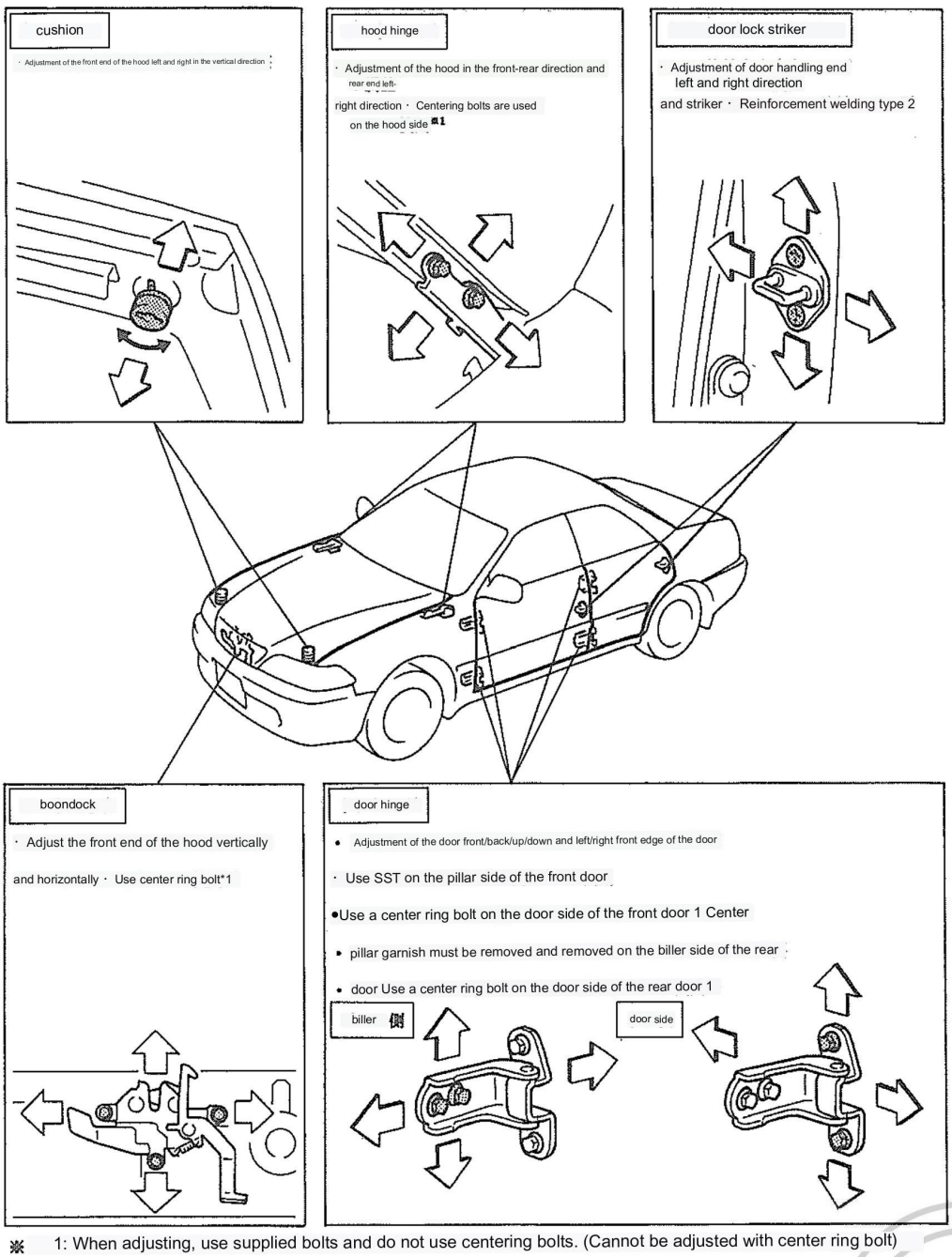
T0048B24

Body installation adjustment

Inspect the level difference, gap, separation, and closing condition between the hood/door and the body. If there is a problem, adjust it at the indicated position below.



※ 1: When adjusting, use supplied bolts and do not use centering bolts. (Cannot be adjusted with center ring bolt)

*2: To adjust, loosen the striker mounting bolt until the striker shakes, then tap the striker lightly with a plastic hammer.

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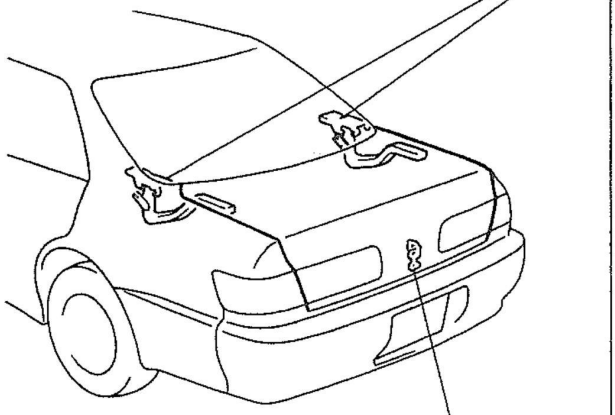
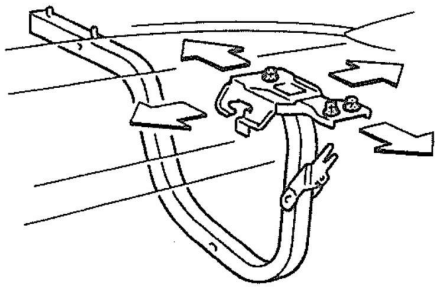


luggage door hinge

· Adjustment of the front and back of the door and the left and right of the front edge of the door

■Package tray trim needs to be removed

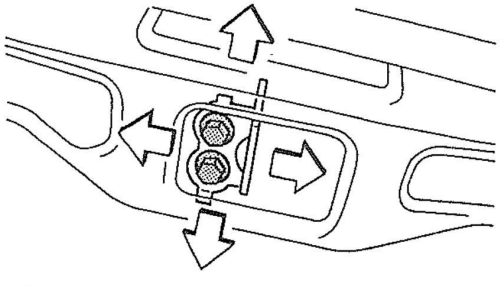


luggage compartment door striker

· Adjustment of left and right rear end of door and

• Reinforcement welding type 2

striker · Removal of rear floor finish plate required



*2: To adjust, loosen the striker mounting bolt until the striker is loose, and use a plastic mallet to gently tap the striker.

Tap and adjust.

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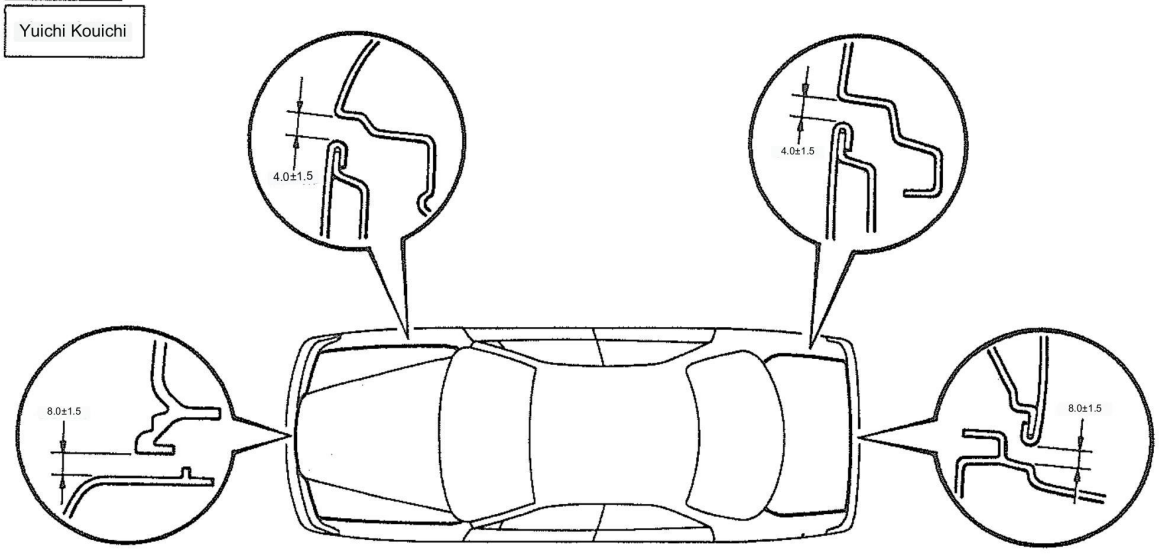
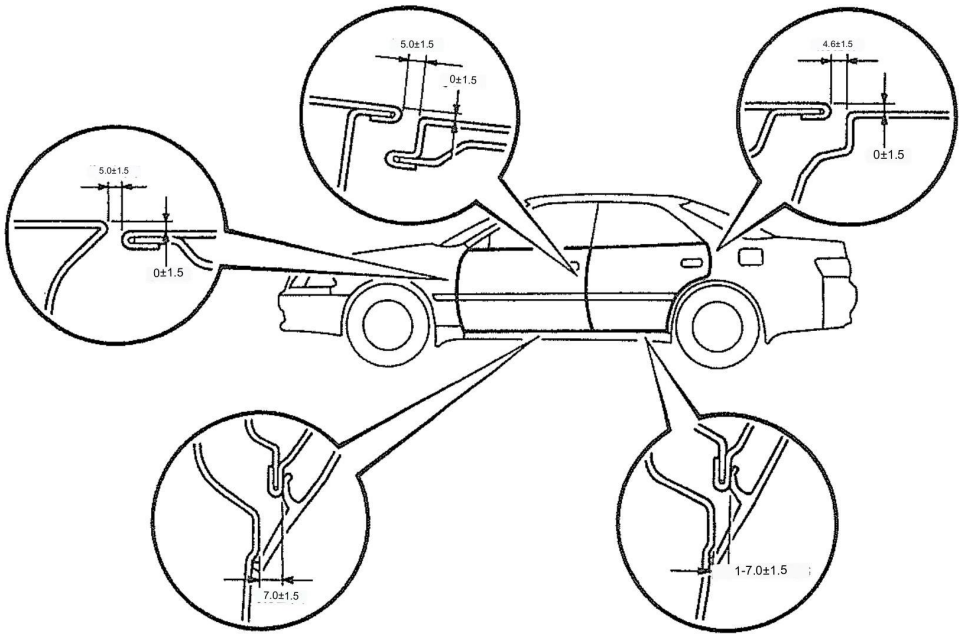
Installation reference value

マークⅡ

Yuichi Kouichi





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B19559

Hui family times
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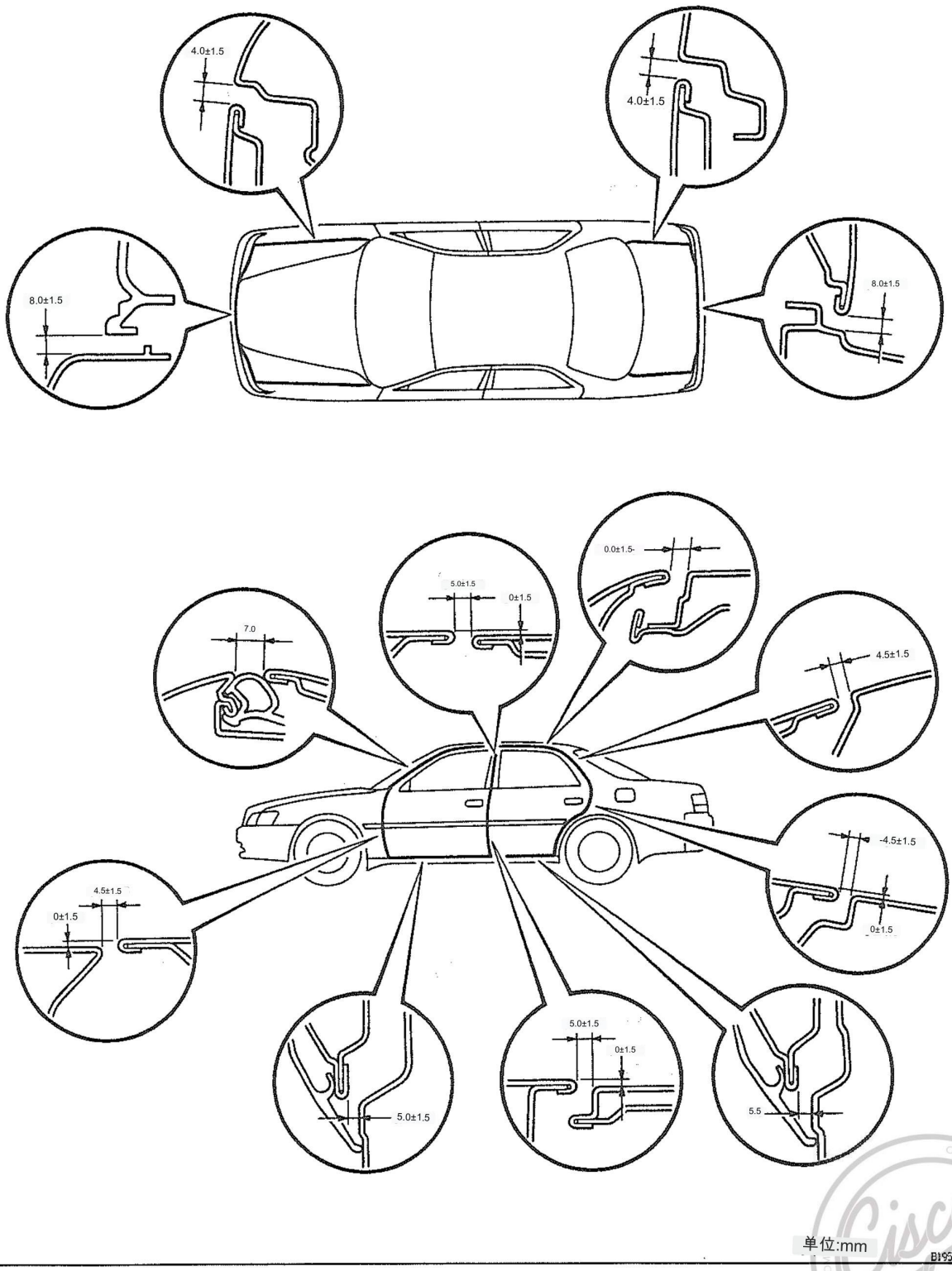
Cresta



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T0040821

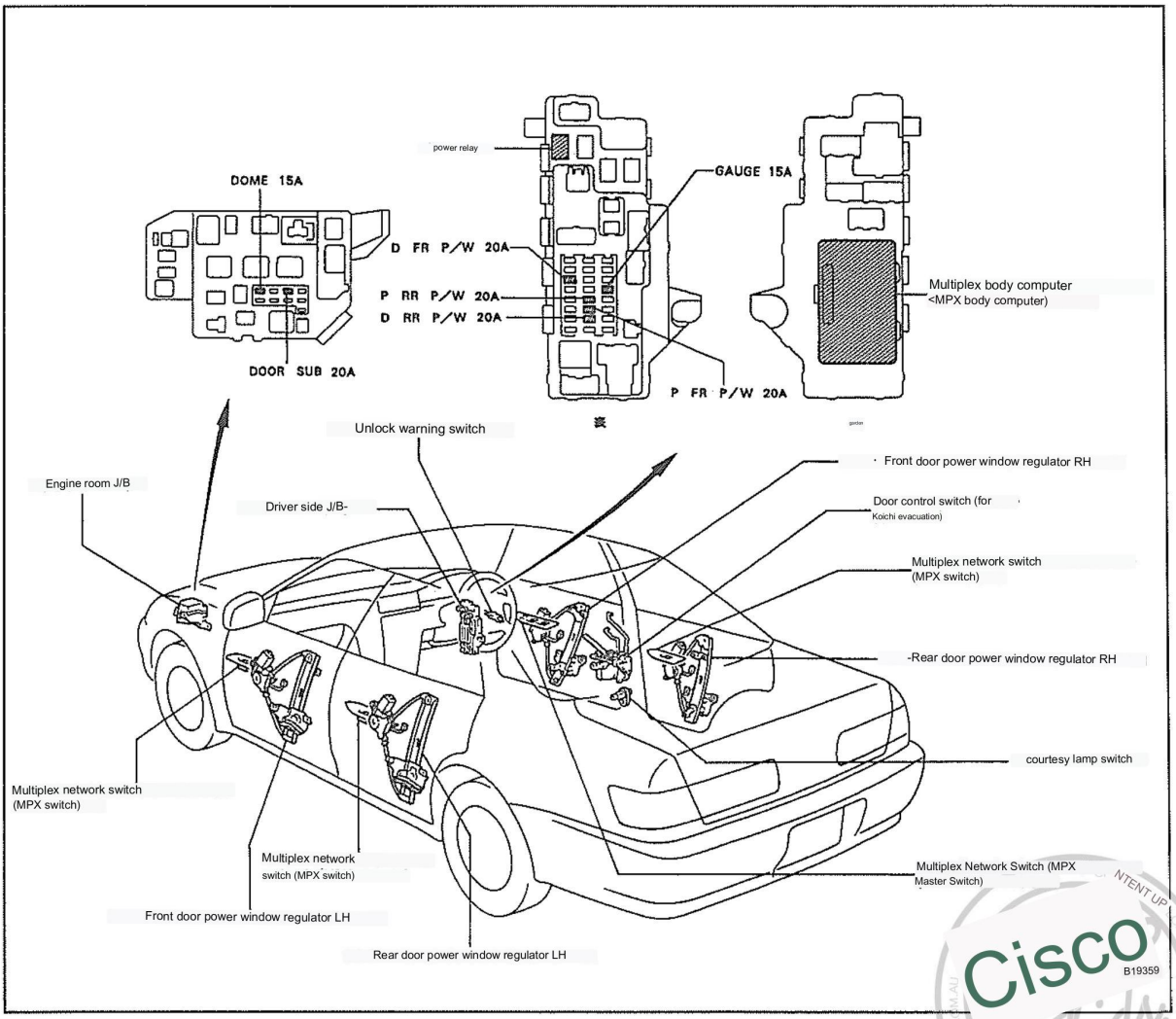
power window

Preparation items

	09082-00030	toyota electrical tester	Single point casting
	09083-00150	test lead set	For single body point

T0040832

Parts layout diagram



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steamed noodles
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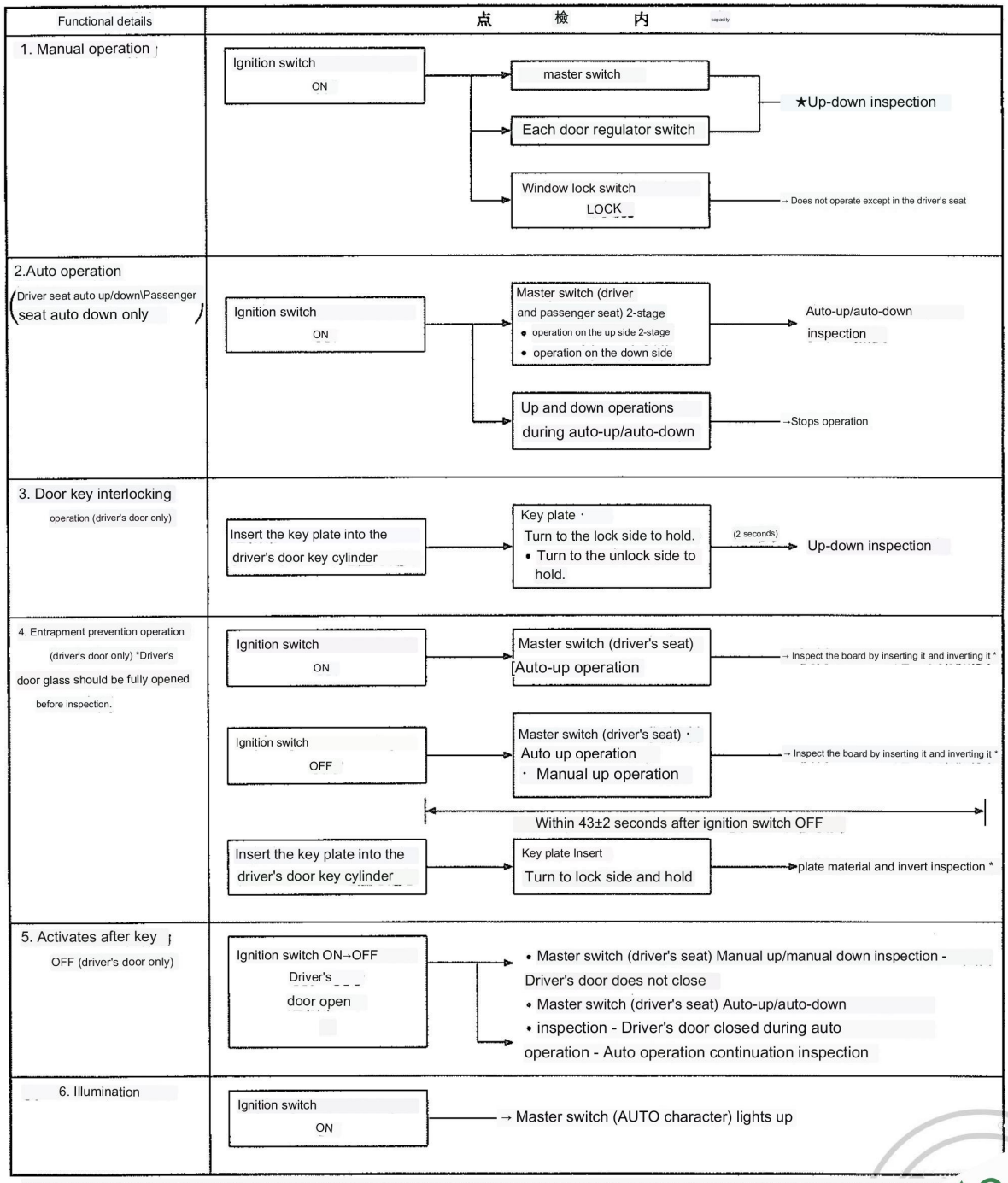
T0049634

Functional check

Power window inspection



*: When using a plate material of 4 mm to 150 mm, it can be reversed up to approximately 200 mm from the glass opening. In addition, if a material of 151mm or more is used, it will be reversed approximately 50mm from the bottom edge of the inserted board.

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TO049635

troubleshooting

How to proceed with troubleshooting

(1) Check according to the applicable chart from the malfunction phenomenon list.

注意 If multiple defects occur, select the one with the smaller chart number.
From there, troubleshoot.

How to read the flowchart

(1) Perform inspection starting from number 1 given to the work title.

(2) If there is a number in the result, proceed to the corresponding number.

(3) If the results indicate ~defect, take corrective action and check the phenomenon again.
After approval, it will end.

〈参考〉 The terms in each flowchart are abbreviated as follows.
- MPX body computer... MPX ECU
- MPX master switch...Master SW
- MPX switch (each regulator switch)...MPX
- SW Ignition switch...IG SW
- Wire harness...W/H
- ~Switch...~SW

List of malfunction phenomena

○...Normal operation ×...Abnormal or immobile

MPX master switch			Each MPX regulator switch	Applicable chart
driver's seat manual	driver seat auto	Other than driver's seat		
X	X	X (All seats)	X	1
X	×	○(All seats)	○	2
○	X	○ (All seats)	○	3
○	○	× (all seats)	X	4
○	○	x (partial only)	× (partial only)	5
○	○	X (All seats)	○	6
○	○	x (partial only)	○	7
Door key linked power window function does not work (driver's seat)				8
The pinch prevention function does not work (driver's seat)				9
Door glass flips automatically when raised (driver's seat)				10
Power window function does not work after key OFF (driver's seat)				11

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circuit figure

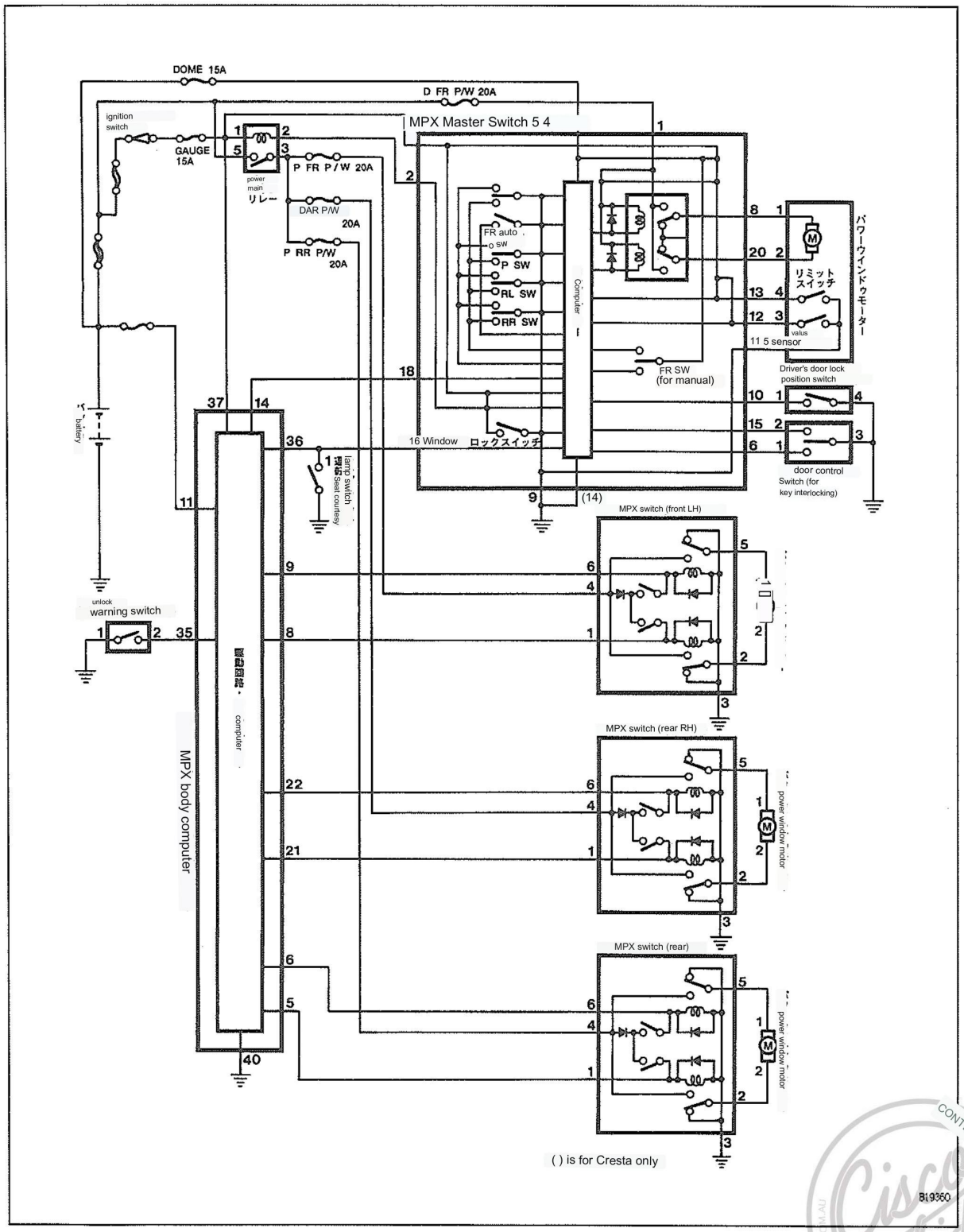

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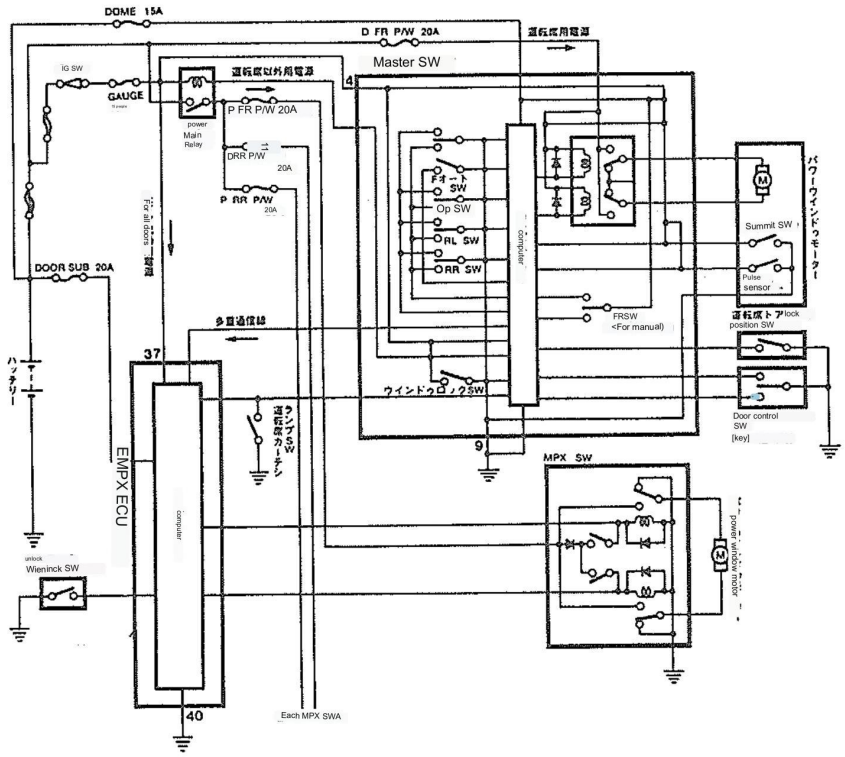
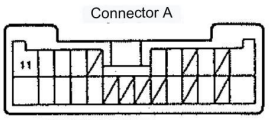
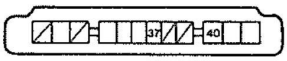
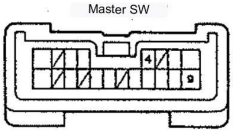
chart 1



MPX ECU







	work title	Inspection procedures/standards	結 Fruit
1	Check each fuse	• GAUGE fuse (15A) · DOOR SUB fuse (20A) · DOME fuse (7.5A) · Is each P/W fuse (20A) normal?	Go to YES 2 NO-fuse blown
2	Disconnect the master SW connector 3		After work go to 3
Check	the master SW ground	· Master SW Vehicle side connector 9 terminals Between body ground Semi- 蒸 way available	YES - Go to 4 NO-W/H (section shown on left)
4	Master SW input Signal check	· Master SW Vehicle side connector 4 terminals Between body ground Reference IG SW ON...10~14V	Defective YES - Go to chart 2 To NO-5
5	Disconnect the MPX ECU connector		After work go to
Input	MPX ECU IG signal 6 inspection	· MPX ECU Vehicle side connector 37 terminal Between body 蒸 ground Semi-IG SW ON 10~14V	6 YES - go to 7 NO-W/H (Master SW4 terminal ~ 37 terminal) Defective
7	Between master SW → MPX ECU Mizodori inspection	· Master SW Vehicle side connector 4 terminals MPX ECU Vehicle side connector 37 Standard continuity between terminals	Go to YES-8 NO-W/H (section shown on the left) Defective
8	MPX ECU power supply check	• MPX ECU Vehicle side connector 11 terminal Between body ground Standard 10~14V	YES- Go to 9 NOW/H (terminal 11 ~ DOOR SUB) defective YES
9	MPX ECU ground inspection	· MPX ECU vehicle side connector 40 terminal and body ground Standard continuity.	- MPX ECU defective NO-W/H (section shown on the left) defective

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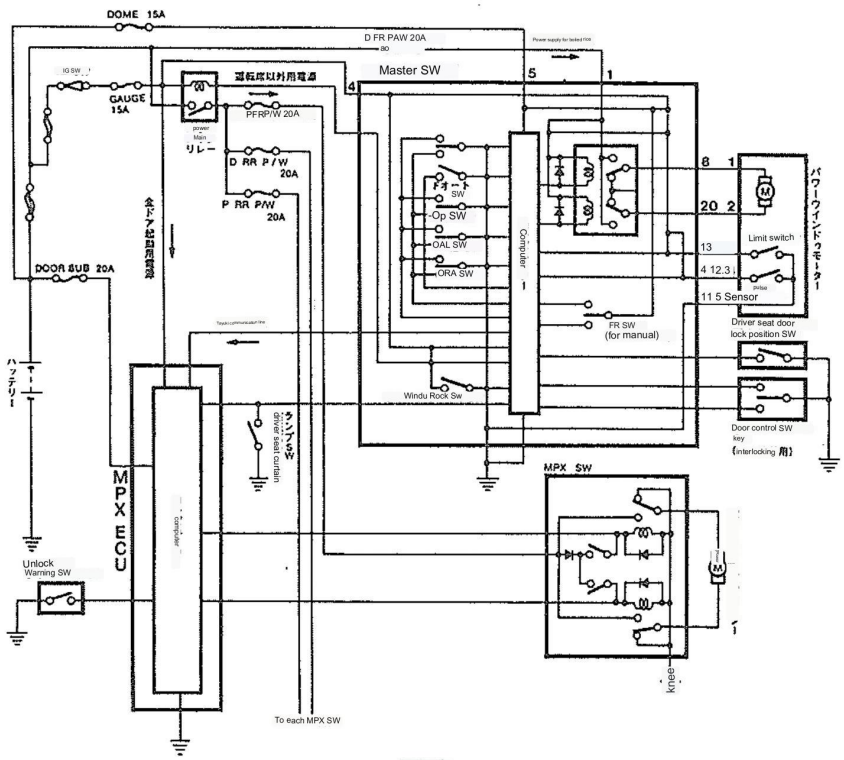
chart 2



	work title	Inspection procedures/standards	result
1	fuse inspection	· Is the D FRP/W fuse (20A) normal?	Go to YES 2 NO-fuse blown
2	Disconnect the master SW connector		After work go to 3
3	Master SW input signal check	• Master SW Vehicle side connector 4 terminals Between body ground Criteria When IG SW is ON... 10~14V Also, is the contact pressure	YES Go to 4 NO-W/H or terminal failure
4	Master SW (for driver's seat) power supply check	OK? · Between master SW, vehicle side connector 1 terminal, and body ground Standard 10~14V	Go to YES-5 NOW/H (D FRP/W fuse ~ 1 terminal) Defective
5	Door glass (driver's seat) construction inspection	Battery + Master SW Vehicle side connector 20 terminals 1 Ascending Battery Master SW Vehicle side connector 8 terminals Battery + Master SW Vehicle side connector 8 terminals Battery Master SW Vehicle side connector 20 terminals ⇒Down	YES Master SW defect NO - Go to 6
6	Power window motor single point 検	· Refer to unit inspection (P15-125)	YES W/H (Master SW~ between motors) Defective NO Power window motor defective

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steamed noodles
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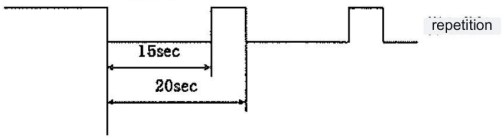
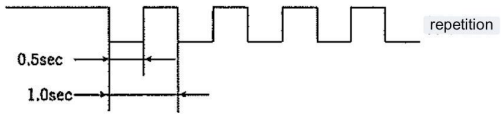
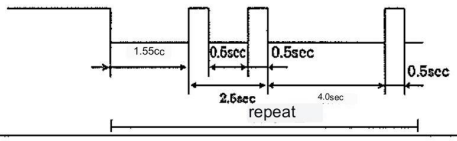
chart 3

	work title	Inspection procedures/standards	result
1	Disconnect the master SW connector		After work go to 2
2	Master SW ECU Power supply check	· Master SW Vehicle side connector 5 terminals Between body ground Standard 10~14V	YES - Go to 3 NOW/H (DOME~5 terminal) Defective
3	Diagnostic inspection (Check within 45 seconds after removing the key from the key cylinder. At this time, the driver's door is closed.)	Master SW AUTO Is there any lighting flashing? · It can be divided into the following three types depending on the way it blinks. (1) Limit SW abnormal repetition  (2) Repeated pulse sensor abnormality  (3) Limit SW/pulse sensor simultaneous error 	Go to YES 4 (no flashing) NO - Go to 8 (blinking)
4	Door glass fully open → fully closed time check	· Does the door glass fully close → fully open within 10 seconds with manual operation? (Auto-up operation stop condition: 10±1 seconds have passed after the auto-up operation started)	YES - Master SW defective To NO-5
5	Door glass sliding resistance inspection	· Adjustments will be made regarding the following items. 1) Is the door installed incorrectly? 2) Is there any foreign matter trapped around the door? 3) Is there any deformation of the weather strip? 4) Is the door glass tilted too far inward? 5) Is the door mirror bracket installed properly?	1) - Door installation adjustment 2) Foreign matter removal 3)-Weather strip replacement 4)- Door glass installation adjustment 5)- Door mirror bracket installation adjustment After implementing the above, go to 6
6	Power window operation check	• Does it work properly with auto-up operation?	YES End Go to NO-7
7	Power window motor, regulator inspection	• Disconnect the regulator and power window motor. Does the power window move smoothly? → Refer to individual inspection	YES - Defective regulator (no motor) NO - Defective power window motor
8	(P15-125) Disconnect the master SW connector and the power window motor connector.		Go to 9 after work
9	Master SW (vehicle side) ~ W/H continuity check between power window motor (vehicle side)	• Master SW Vehicle side connector Power window motor Is there continuity between the vehicle side connectors? Master SW motor 11 terminal 5 terminal 12 terminal 3 terminal 13 terminal 4 terminal	YES Go to 10 NO-W/H (section on the left) Defective
10	Master SW, power window motor quality judgment	· Connect the master SW of a vehicle with a normal power window function (pinch prevention) to the inspection vehicle and also connect the power window motor connector → Is the auto-up operation normal?	YES - Master SW defective NO- Power window motor defective (no regulator)

Note) See the previous or next page for the circuit diagram.

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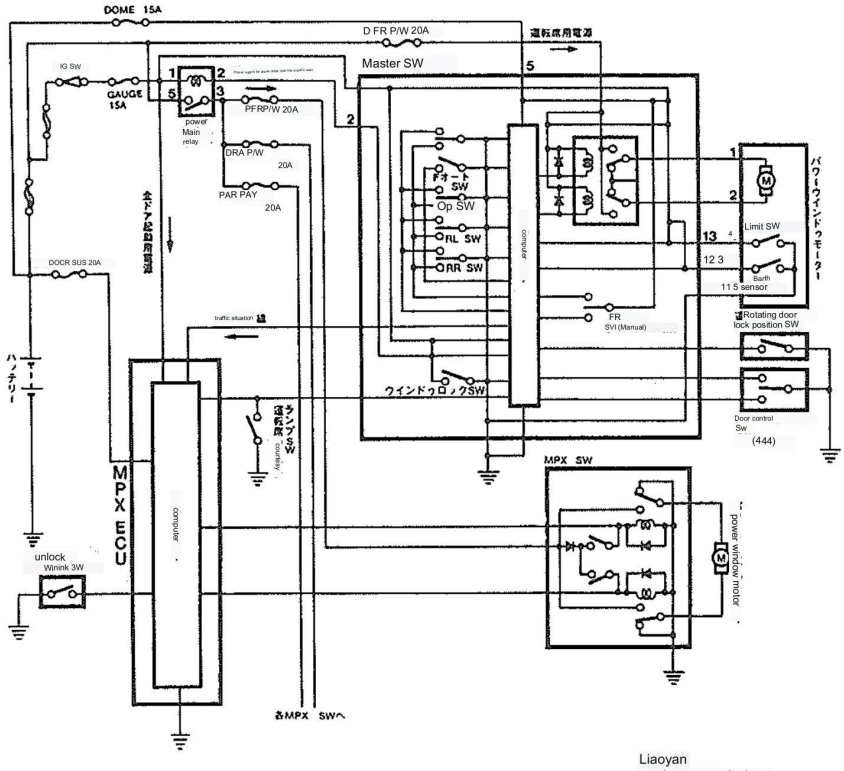
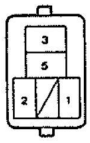
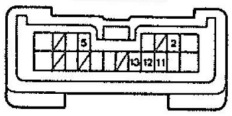
chart 4



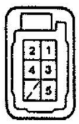
power main relay



Master SW



Liaoyan seat power window motor



	work title	Inspection procedures/standards	result
1	Power main relay unit inspection	‹· Refer to unit inspection (P15-123)	YES Go to 2 NO-Power main relay failure
2	Power supply voltage check for areas other than the driver's seat (1)	• Between main relay vehicle side connector 5 terminal and body ground Standard 10~14V	YES - to 3 NO-W/H (ALT fuse ~ main relay 5 terminal) defective
3	Power supply voltage check for areas other than the driver's seat (2)	• Between main relay vehicle side connector 1 terminal and body ground Reference When IG SW ON...10~14V	YES Go to 4 NO-W/H (GAUGE fuse ~ main relay 1 terminal) defective
4	Disconnect the master SW connector to which the power main relay will be attached		After work go to 5
5	5 Voltage check when power main is ON	· Master SW Between vehicle side connector 2 terminals and body ground Reference IG SW ON...10~14 V	Go to YES-6 NO-W/H (Main relay 2 terminal ~ Master SW2 terminal) Defective
6	Install the master SW		After work Go to 7
7	Window lock switch function check	· Master SW side connector 2 terminals between body ground Standards When IG SW is ON (1) Window lock SW NORMAL 0.5V or less (2) Window lock SW LOCK 8V or more	YES - Go to chart 5 (Master SW, main relay is normal) | NO - Master SW is defective

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JBG012

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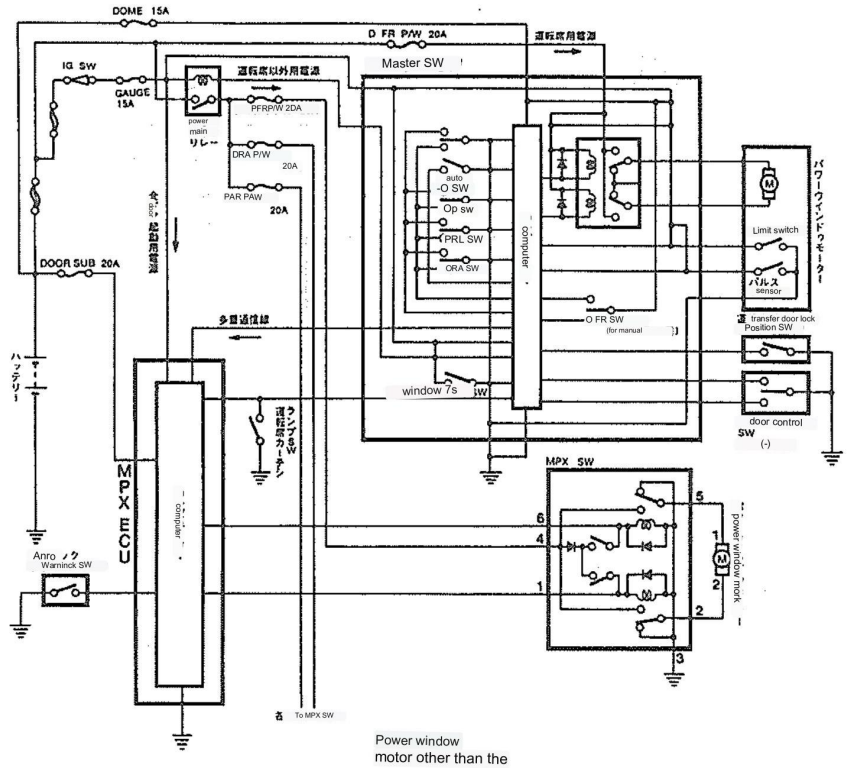
chart 5



	work title	Inspection procedures/standards	result
1	Fuse inspection for each MPX	•P FR P/W fuseP RR P/W fuse · D RR P/W fuse is normal?	Go to YES 2 NO- Fuse blown
2	Remove the MPX SW that is not working		After work go to 3
3	MPX SW unit inspection	· Refer to unit inspection (P15-125)	YES Go to 4 NO - MPX SW defective
4	MPX SW power supply voltage check	· MPX SW between vehicle side connector 4 terminals and body ground Standard Window lock NORMAL, IG SW ON time · 10~14V •	Go to YES-5 NO-W/H (P/W fuse ~4 terminal) Defective
5	MPX SW earth inspection	MPX S/W vehicle side connector 3 terminals between body ground 基 Brush with continuity	Go to YES-6 NOW/H (3 terminals ~ ground) defective
6	Door glass operation check	Battery MPX SW Vehicle side connector 5 terminal Battery MPX SW Vehicle side connector 2 terminal 1 Up Battery + MPX SW Vehicle side connector 2 terminals Battery MPX SW Vehicle side connector 5 terminals 1 Lower	YES - MPX SW defective NO - Go to 7
7	Power window motor single point arm	· Refer to unit inspection (P15-125)	YES - W/H (section below) Defective (1) MPX SW5 terminal Motor 1 terminal (2) MPX SW2 terminal Motor 2 terminal NO- Power window motor defective

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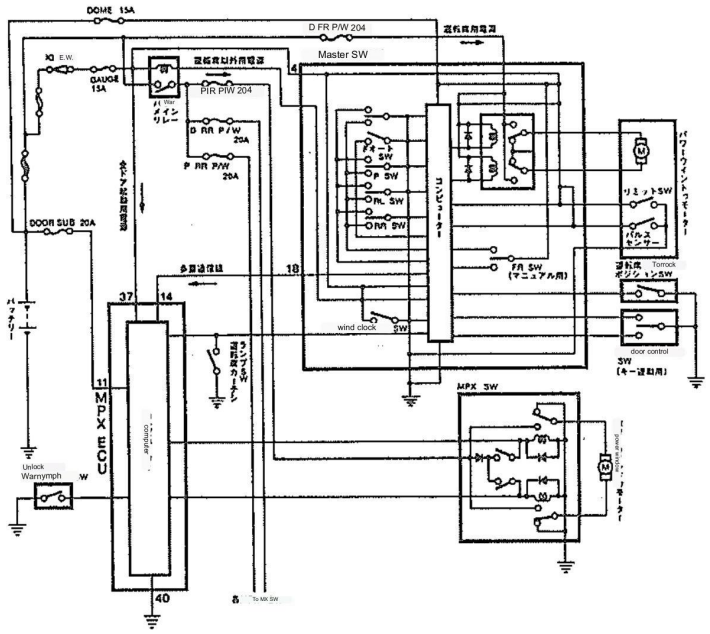
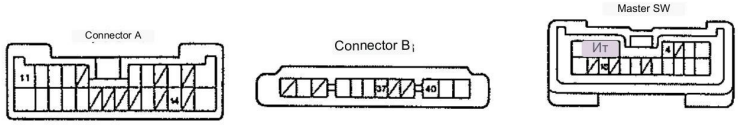
chart 6



MPX ECU



	work title	Inspection procedures/standards	Result After
1	Disconnect the master SW connector		work go to 2.
2	MPX ECU internal short circuit inspection	· Master SW Vehicle side connector 18 terminals Between body ground Standard 1~2kQ	YES - Connect master SW and go to chart 7 To NO-3
3	Disconnect the MPX ECU connector		After work go to 4
4	MPX ECU IG input 信号 point nucleus	•MPX ECU vehicle side connector 37 terminal between body ground Standard IG SW ON...10~14V	YES to 5 NO-W/H (GAUGE ~ MPX ECU37 terminal) defective
—	Master SW MPX ECU 5 | 間 check	· Master SW Vehicle side connector 4 terminals → MPX ECU Vehicle side connector 37 Between terminals Standard 導通Yes	Go to YES 6 NO-W/H (Master SW4 terminal ~ MPX | ECU vehicle side connector 37 terminal) Defective
6	MPX ECU power supply check	· MPX ECU vehicle side connector 11 terminal between body earth wire 10~14V	YES - To 7 NO-W/H (DOOR No. 2~ MPX ECU11 terminal) Defective
7	Master SWMPX ECU communication line inspection	• MPX ECU Vehicle side connector 14 terminals Master SW Vehicle side connector between 18 terminals Reference conductor	YES - NOW/H (section shown on left) Defective
8	MPX ECU ground inspection	• MPX ECU vehicle side connector 40 terminal between body ground Standard guidance available	YES - MPX ECU defective NO-W/H (section shown on left) defective

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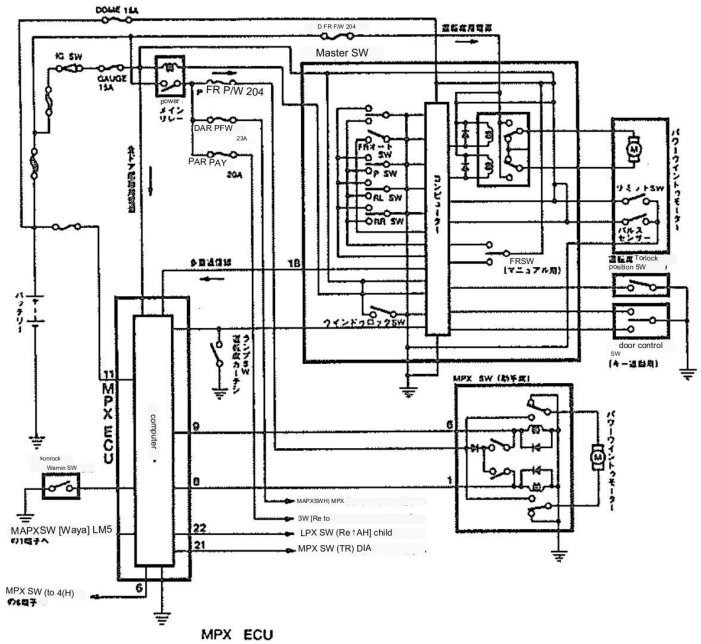
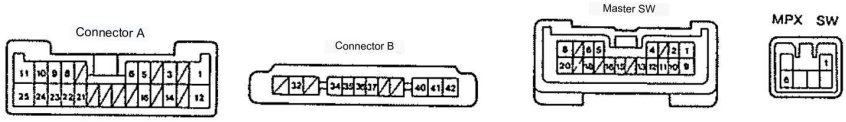
Technical report

chart 7



MPX ECU



	work title	Inspection procedures/standards	result
1	Remove master SW (connector connected)		After work go to 2
2	Master SW signal output check	· Connect an electrical tester between the master SW18 terminal and body ground to set the voltage range. Check the DV without operating the SW for more than 1 minute · If you operate a master switch that cannot be operated, the voltage will drop below 1V and above 5V. (Confirmation of resumption of communication)	Go to YES 3 NO - Master SW defective
3	Disconnect the connector of the MPX SW that cannot be operated.		After work go to 4
4	MPX ECU↔MPX SW Signal inspection (1)	· Set the inoperable master SW to the UP side • MPX SW Vehicle side connector 6 terminal Between body and ground Reference IG SW When ON Window lock NORMAL...8V or more	YES- MPX SW defective NO - Go to 5
5	MPX ECU MPX SW signal inspection (2)	· Set the inoperable master SW to the DOWN side · MPX SW Vehicle side connector 1 terminal to body ground Standard When IG SW ON, Windu Lock NORMAL...8V or	YES - MPX SW defective NO - Go to 6
6	more IG SW OFF, disconnect the MPX ECU connector		After work Go to 7
7	Between MPX ECU → MPX SW 7	Example: If the passenger seat cannot be operated, all connectors are connected to the vehicle side. · Between MPX SW6 terminal MPX ECU 9 terminal... Continuity • exists Between MPX SW6 terminal and body ground ..... No continuity · MPX SW1 terminal Between MPX ECU 8 terminals... Continuity exists · MPX SW1 terminal Body ground Between...· No continuity	YES MPX ECU defective NOW/H (section shown on the left) Defective

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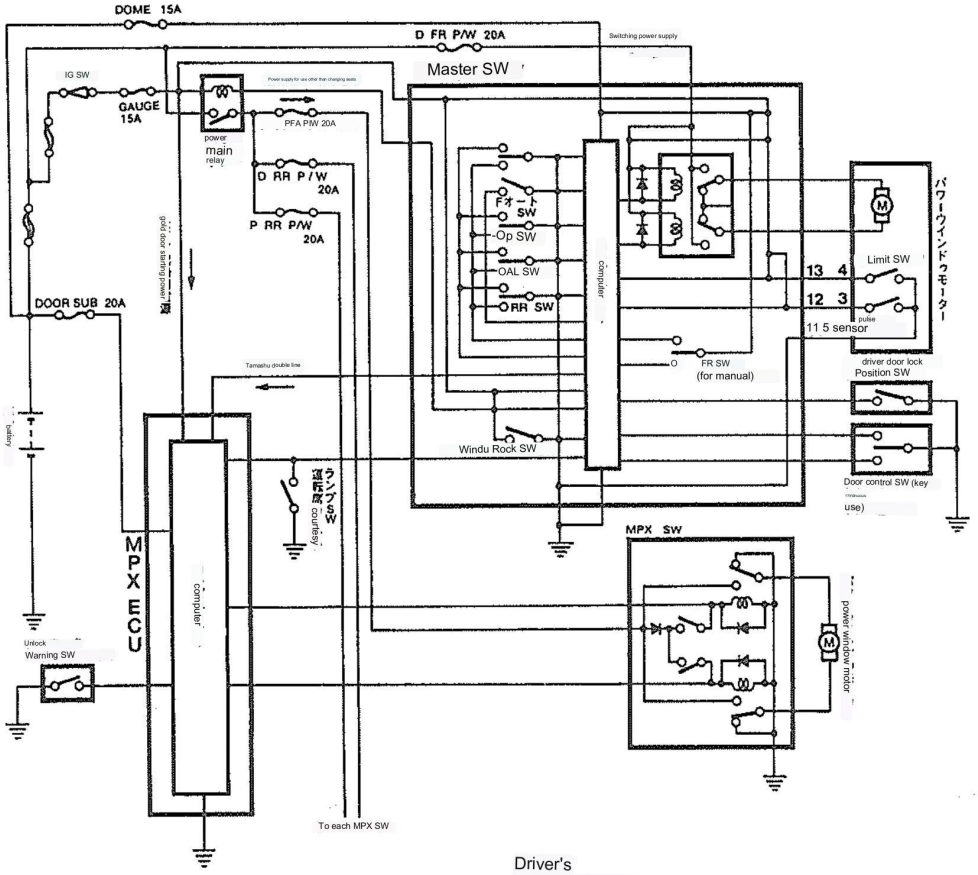
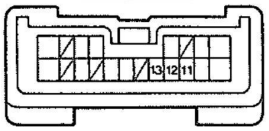
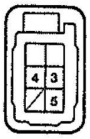
Cha — G 8	Door key linked power window function does not work



Master SW



Driver's seat power window motor



	work title	Inspection procedures/standards	result
1	Key-linked door lock inspection	· Do you lock/unlock all doors with the driver's door lock cylinder?	Go to YES-2 NO To troubleshoot electric door locks
2	Master SW inspection	· Does the driver's seat power window operate normally using the master SW?	YES Master SW NO-To chart 1 or 2

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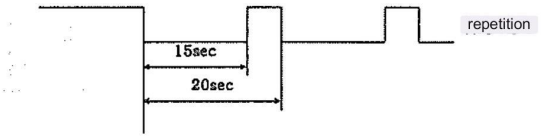
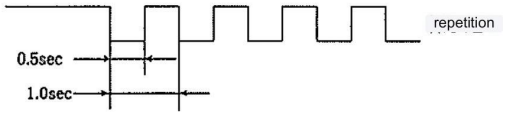
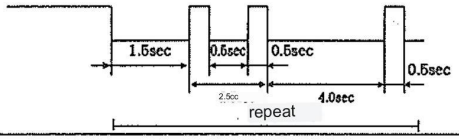
Chart 9 Pinching prevention function does not work

	work title	Inspection procedures/standards	Conclusion Fruit
1	Diagnostic inspection (from the key cylinder Check within 45 seconds after removing the key, at which time the driver's door is closed.)	Master SW AUTO Is there any lighting flashing? · Depending on the way it flashes, it can be divided into the following three types. (1) Limit SW abnormal repetition  (2) Repeated pulse sensor abnormality  (3) Limit SW/pulse sensor simultaneous error 	YES Go to 2 (no flashing) NO - Go to 4 (blinking)
2	Auto-up operation check	· Auto-up normally when operating auto-up with master SW Does it work?	Go to YES-3 Go to NO-4
3	Limit SW~Door W/H point board	· Check the voltage between terminals 13 and 11 of the master SW vehicle side connector with all connectors connected (connect from the back of the connector) Standard Door glass fully open with auto-up operation → 0V → 10~14V when fully opened	YES - Master SW defective NO - Go to 4
4	Disconnect the master SW connector and power window motor connector.		After work Go to 5
5	W/H continuity check between ~ master SW (vehicle side) and power window motor (vehicle side)	· Master SW Vehicle side connector → Power window motor Is there continuity between the vehicle side connector? Master SW Motor 11 terminals 5 terminals 12 terminals 3 terminals 13 terminals 4 terminals	YES Go to 6 NO-W/H (section shown on left) Defective
6	Master SW, power window motor quality judgment	•Connect the master SW of a vehicle with a normal power window function (pinch prevention) to the inspection vehicle and also connect the power window motor connector → Is the auto-up operation normal?	YES - Defective master SW NO- Defective power window motor (no regulator)

note) See previous or next page for circuit diagram

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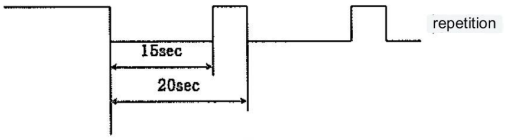
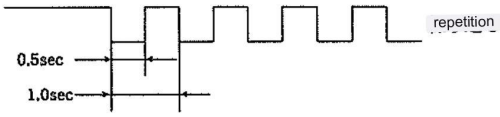
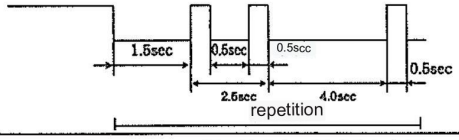
Chart 10 Door glass flips automatically when raised (driver's seat)

	work title	Inspection procedures/standards	result
1	Diagnostic inspection (Check within 45 seconds after removing the key from the key cylinder. At this time, the driver's door is closed.)	Master SW AUTO Is there any lighting flashing? · Depending on the way it flashes, it can be divided into the following 3 types. (1) Limit SW abnormal repetition  (2) Repeated pulse sensor abnormality  (3) Limit SW/pulse sensor simultaneous error 	Go to YES-2 (no flashing)) Go to NO-6 (blinking)
2	Limit SW adjustment	Refer to "Body" - "Points to note when assembling the front door"	After adjustment go to 3
3	Door glass sliding resistance inspection	• Make adjustments to the following items. 1) Is the door installed incorrectly? 2) Is there any foreign matter stuck around the door? 3) Is there any deformation of the weather strip? 4) Is the door glass tilted too far inward? 5) Is the door mirror bracket installed properly?	1) Door installation adjustment 2) - Foreign object removal 3)-Weather strip replacement 4)- Door glass installation adjustment 5) - Door mirror bracket installation adjustment After performing the above, go to 4.
4	Power window operation check	· Does the auto-up operation fully close the door without reversing?	YES - End NO-5 to
5	Regulator operation check	· When performing manual up/down operation, check the following: 1) Is the regulator movement smooth? If even one is NG. 2) Is there any abnormal noise (squeak, crackle)? NO 3) Check if the wire is securely connected → Reconnect the wire	Go to YES-6 NO-9 to
6	Disconnect the master SW connector and power window motor connector.		After work Go to 7
7	Master SW (vehicle side) Power window motor (vehicle side) W/H continuity check	· Master SW Vehicle side connector Power window motor Is there continuity between the connectors on the vehicle side? Master SW Motor 11 terminals 5 terminals 12 terminals 3 terminals 13 terminals 4 terminals	YES Go to 8 NO-W/H (section on the left) defective
8	Master SW, power window motor quality judgment	•Connect the master SW of the vehicle whose power window function (pinch prevention) is normal to the vehicle being inspected, and also connect the power window motor connector → Is the pinch prevention function working properly?	YES - Master SW defective NO - Defective power window motor (no regulator)
9	Power window motor, regulator inspection	· Disconnect the regulator and power window motor. Does the power window move smoothly? → Refer to individual inspection (P15-125)	YES Defective regulator (no motor) NO - Defective power window motor

Note) See the previous or next page for the circuit diagram.

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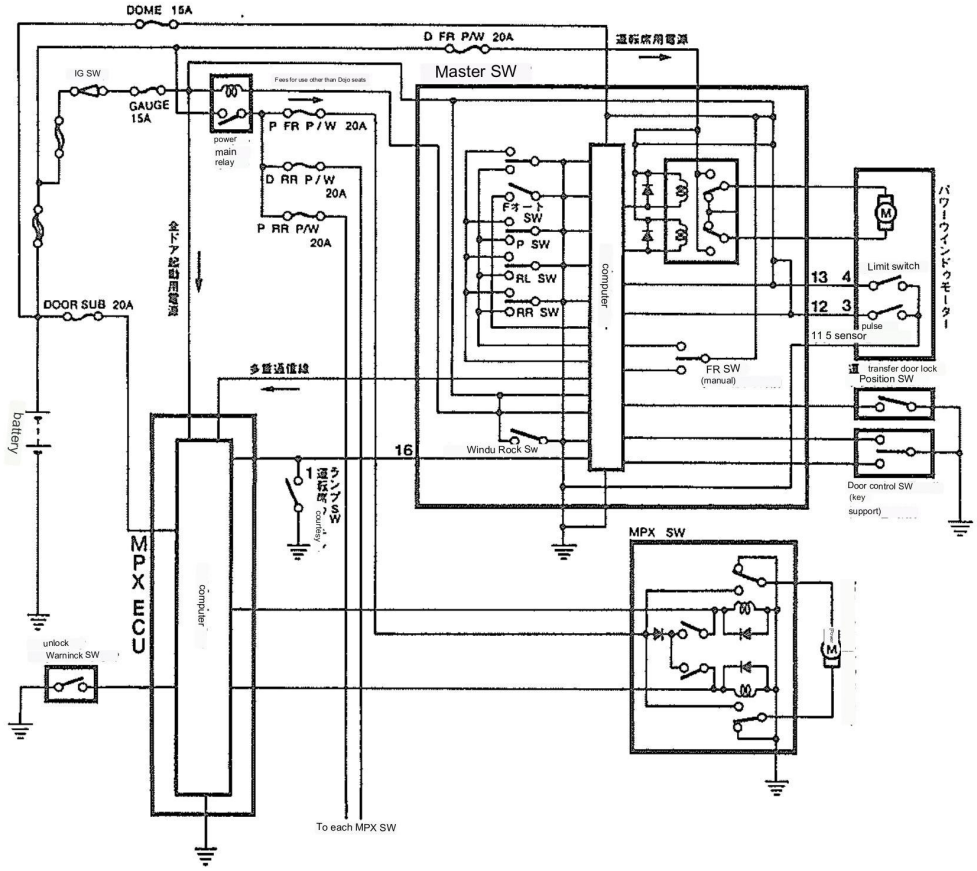
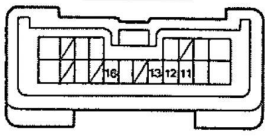
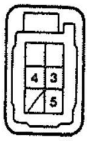
Chart 11 Power window function does not work after key OFF





Courtesy lamp SW

Driver's seat power window motor



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	work title	Inspection procedures/standards	Fruit
1	Courtesy lamp SW Single body inspection	• See unit inspection (P15-126)	Go to YES 2 NO - Courtesy lamp SW defective
2	Disconnect the master SW connector		After work go to 3
3	Signal input check to master SW (1)	· Between master SW, vehicle side connector 16 terminal, and body ground. Driver's door closed. Is there continuity?	YES-W/H (Courtesy lamp SW ~ master SW16 terminal defective) |Go to NO-4
4	Signal input check to master SW (2)	· Master SW Vehicle side connector 16 terminals Between body ground Standard Driver's door open Is there continuity?	YES - Master SW defect NO-W/H (Courtesy lamp SW ~Master SW16 terminal) Defective

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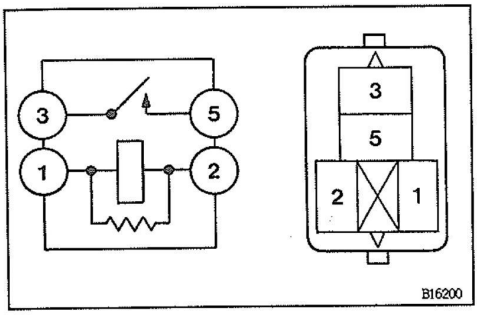

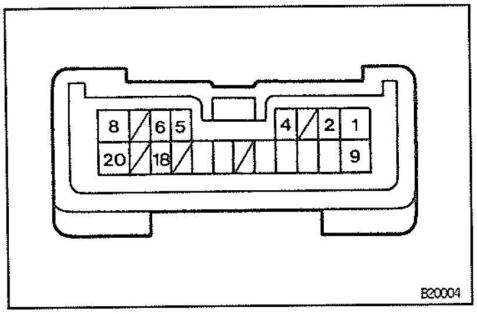

Individual inspection

main relay

1 Continuity check

(1) Check continuity between each terminal of the connector.

standard Between 1 terminal and 2 terminals... Continuity exists

Between 3 terminals and 5 terminals... No continuity

(2) When applying battery voltage between terminals 1 and 2 of the connector, check continuity between terminals 3 and 5.

Standard Continuity

multiplex network master switch (MPX master switch)

1 Operation check

(1) Check continuity and voltage between each terminal and body ground according to the inspection procedure below.

do.

注意 • In the table, “disconnected vehicle side” means to disconnect the 車 connector and inspect the connectors on both sides, and “connector connected” means to inspect with the connectors connected. After

• checking the “disconnected vehicle side”, check the “connector connection”.

standard

measurement connector conditions	ID tester tester ⊕ ↔ ⊖	item	inspection conditions	base quasi	Problem location in case of non-standard
Connection disconnected vehicle side	1 ↔ Body ground (power supply voltage)	When power is normal		10V~14V	Vehicle side
	2 body earth (P/W main relay voltage)	Voltage ignition switch OFFON		0V → 10~14V	
	4 body ground (power supply voltage)	Voltage ignition switch OFF→ON		0V → 10~14V	
	5 Body ground (power voltage)	Normal pressure		10V~14V	
	8 pode earth (P/W motor output)	Normal time		No continuity	
	9Body Earth (Earth)	導 Normal time		With continuity	
	18 body ground (multiple communication bus output)	Normal time		No continuity (1kΩ or more)	
	20 Body Earth (P/W motor output)	導Normal time		No continuity	

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Measurement connector conditions	ID tester ⊕ ↔ tester ⊖	item	point 検 条 subject	基 quasi	Problem location in case of non-standard
connector connection	2 Body ground/ P/W main relay 駆動電圧	Voltage	Ignition switch |CH NORMAL→LOCK	ON, Window lock switch 1V or less → 9V that's all	master switch
	8 Body Earth (P/W motor output)	Voltage	Ignition switch ON, master switch driver's seat Switch OFF DOWN (manual operation)	0V→9V or more;	
			Ignition switch ON, driver's door glass fully closed → Master switch driver's seat switch OFF → DOWN (Auto operation) Door glass fully open	OV 9VE →DV	
	18 body ground (multiple communication bus output) voltage	✻1 ✻3	Ignition switch ON, master switch passenger seat switch OFF-UP after leaving for more than 1 minute	1V or less ↔ 0V→5V or more rub back	
			Ignition switch ON, left for over 1 minute*2 Rear master switch Passenger seat switch OFF DOWN	1V or ↔ 0 V→ 5 V less manipulate back	
			Ignition switch After leaving it for more than 1 minute, ON, right rear switch OFF→UP	1V or less ↔ 0V→ 5V or more Take back the photo	
			Ignition switch ON, Leave for over 1 minute*2 After mass right rear switch OFF→DOWN	1V or less ↔ 0V→ 5V or more repeat	
			Ignition switch ON, left for more than 1 minute*2 Rear mass Switch for left rear switch OFF→UP	1V or less ↔ 0V→ 5V or more repeat	
			Turn on the ignition switch and leave it for more than 1 minute*2 Master switch Left rear switch OFF→DOWN	1V or less ↔ 0V → 5V or more repeat	
	20 Body ground (P/W motor output)	電圧	Ignition switch ON, Master switch driver's seat Switch for OFF UP (manual operation)	OV 9VLE	
			Ignition switch ON, driver's door glass fully open → Master switch driver's seat switch OFF → UP (auto operation) → door glass fully open 閉	0V 9V or more →OV	

*1: Since only the presence or absence of communication output in response to switch operation can be determined, it cannot be determined that the MPX master
✻ switch is normal even if it meets the criteria. 2: If communication-related switches (switches in the MPX master switch, door control switch for key interlocking, position switch in the driver's door lock control motor, etc.) are left unoperated for one minute, communication will stop. *3: Check the voltage output using the bar graph display.

JB3191

2 Internal circuit inspection

(1) Check continuity between each terminal of the connector. Standard

between 20 terminals and 9 terminals... Continuity exists

8 terminals Between terminals...Continuity exists

3 Illumination inspection

(1) When connecting terminal ④ of the battery to terminal 4 of the connector ⊖and terminal ④ of the battery to terminal 9, check that the illumination (AUTO) of the power window switch section (front RH) lights up.

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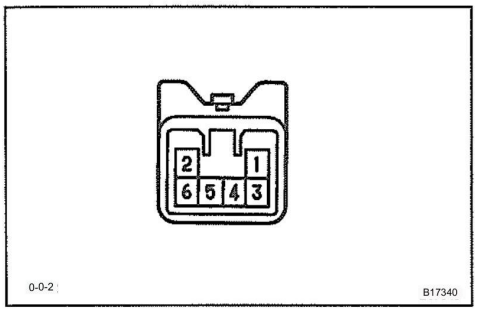

multiplex network switch

(MPX switch)

1 Continuity check

(1) Check continuity between each terminal of the connector.

Rin

manual operation

○○ guidance available

switching \ ID	2	3	4	5
UP	○	○	○	○
OFF	○	○		○
DOWN	○	○	○	○

remote operation

○○ guidance available

battery terminal connection \ ID	2	3	4	5
UP mode + to 6 terminal, to 3 terminals ⊖	○	○	○	○
DOWN mode + to 1 terminal, to 3 terminals ⊖	○	○	○	○

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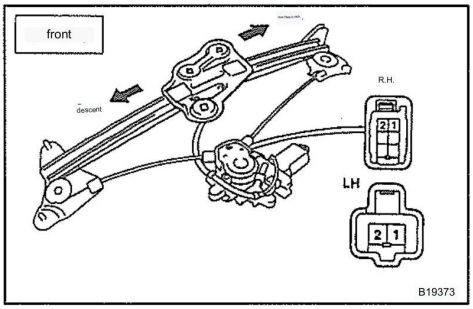
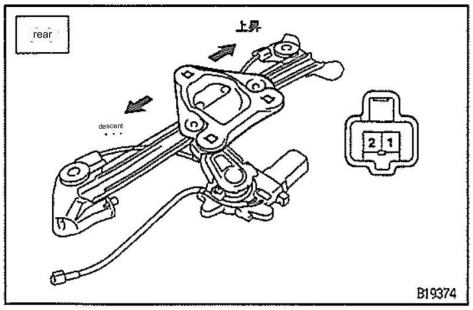
power window motor

When inspecting the driver's seat power window motor, applying battery voltage to connector terminals 3 and 4 may damage the pulse sensor.

Never apply battery voltage as this may cause damage.





1 Power window motor operation check

(1) Turns on motor operation when battery voltage is applied to each terminal.

Inspect.

standard

right door

Measuring conditions	Actuation direction
battery 2 terminals battery 1 terminal	rise
battery +1 terminal battery 2 terminals	descending

left door

Measurement condition	Actuation direction
battery 1 terminal battery 2 terminals	Up 昇
battery 2 terminals battery 1 terminal	under disability

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2 Check PTC operation inside power window motor

•Caution: Do this with the power window motor assembled to the vehicle.

(1) Perform a shutoff inspection.

① Connect the tester DC400 to the 1-terminal or 2-terminal wire harness.

Set the A probe.

Align the arrow on the probe with the direction of current flow.

② Set the window glass to the fully closed position.

⑤ After about 60 seconds when fully closed, turn the power window switch again (for the first time).

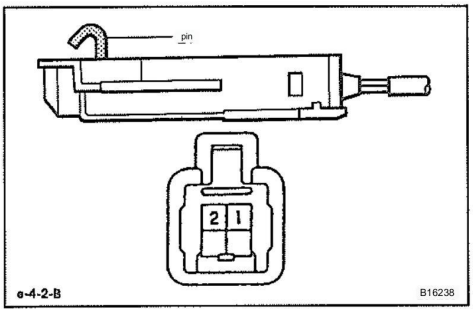
When the current changes from about 16~23A to 1A when set to UP

Check the space. Standard:

Approximately 4~40 seconds

(2) Perform restoration inspection.

① After approximately 60 seconds of shut-off inspection, check that the window glass lowers when the power window switch is set to DOWN.

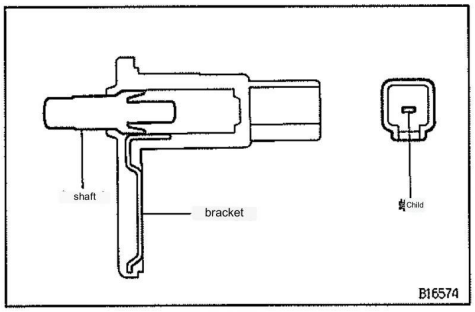


Unlock warning switch

1 Continuity check

Check continuity between connector 1 terminal and 2 terminals.

Standard When the pin is not pushed in... No continuity When the pin is pushed in ••••• Conduction path exists



courtesy lamp switch

1 Continuity check

Check continuity between connector 1 terminal and switch bracket. Standard

When the shaft is not pushed in... there is continuity

When the shaft is pushed in... there is no continuity

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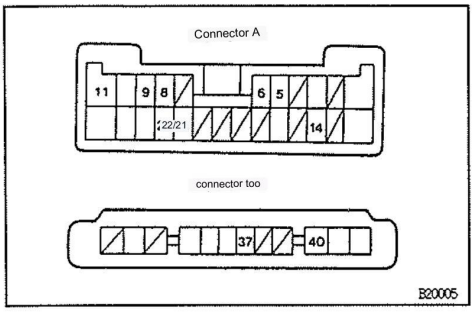

Multiplex network body computer (MPX body computer)

Caution: Since it is not possible to inspect the MPX body computer individually, follow the troubleshooting flowchart to determine pass/fail.

<Reference> The status of each terminal when the connector is connected is shown.

基準

Terminal tester field ↔ number tester ⊖	item	point 検条 subject	foundation
5 Body ground (Rear LHP/W motor output)	Densho	Ignition switch ON, master switch window lock switch NORMAL, master switch left rear switch OFF DOWN	0V→9V以上
6 Body ground (Rear LHP/W motor output)	電圧	Ignition switch ON, master switch window lock switch NORMAL, master switch left rear switch OFF-UP	0V 9V or more
8 Pode Earth (Front LHP/W motor output)	Yosho	Ignition switch ON, Master switch window lock switch NORMAL, Master switch passenger seat switch OFF DOWN	0V→9V以上
9 Body ground (Front LHP/W motor output)	Yosho	Ignition switch ON, Master switch window lock switch NORMAL, Master switch passenger seat switch OFF-UP	0V→9V以上
11 Body ground (power voltage)	Voltage always		10～14V
14 Body ground (multiple communication bus input)	Voltage*2	Ignition switch ON, left for more than 1 minute*1, then master switch on passenger seat , Either switch for right rear or left rear OFF→UP or DOWN	1V or less ↔ Repeat 0V → 5V or more
21 Body ground (Rear RH P/W motor output)	Densho	Ignition switch ON, Master switch window lock switch NORMAL, Master switch right rear switch OFF DOWN	OV9V or higher
22 Body Earth (Rear RH P/W motor output)	Densho	Ignition switch ON, Master switch window lock switch NORMAL, master switch right rear switch OFF-UP	0V→9V以上
37 Body Earth (Power supply	Voltage	Ignition switch OFF→ON	0V→10～14V
voltage) 40 Body earth (Earth)	導 Normal time		With continuity

*1: If communication-related switches (switches in the MPX master switch, door control switch for key interlocking, position switch in the driver's door lock control motor, etc.) are left unoperated for 1 minute, communication will stop.

*2: Check the voltage output using the bar graph display.

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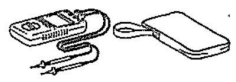
T0049837

electric door lock

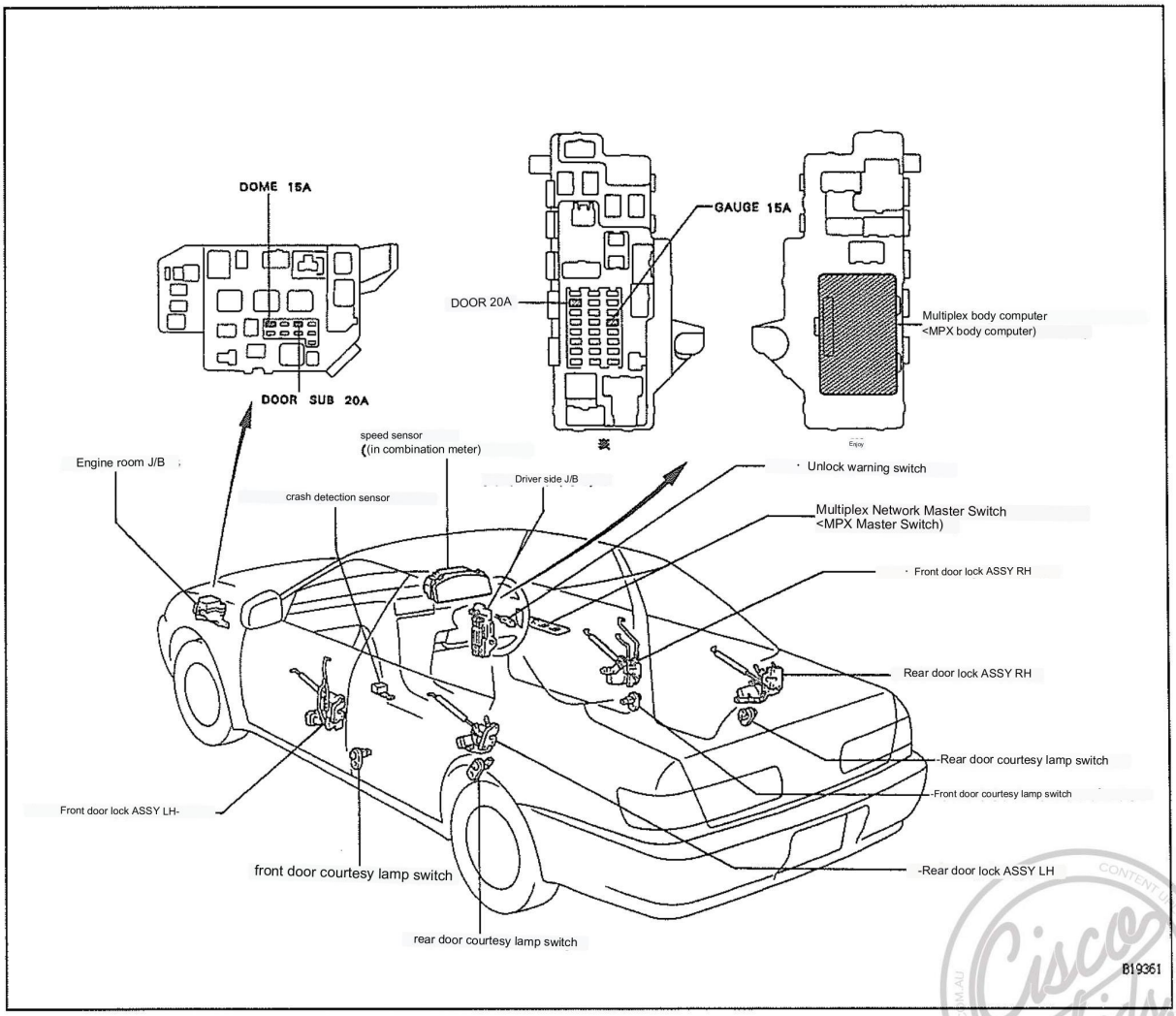
Preparation items

instrument

	09082-00030	Toyota Electrical Tester	For single point rod
	09083-00150	test lead set	For single body point school

T0045838

Parts layout diagram



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T0048040

Functional check

Electric door lock inspection

Functional inspection items	point 検 内 capacity
Basic operation	Door control switch in master switch Insert the key plate into the driver's door lock cylinder → Lock/unlock operation check
Auto door lock operation	Any door unlocked Vehicle speed 20km/h or higher → Lock operation check · At 20km/h or higher, either door unlocks → locks.
Prevents forgetting to remove key *	Insert the key plate into the ignition switch Open the driver's door Lock with driver's door lock knob Door inside master switch Locked with control switch Lock the driver's door with another key plate → Unlock performance check
security net	Remove the ignition switch key plate Close the driver's door Lock the driver's door with the key plate wireless door lock lock Master switch Unlock with inner door control switch Unlock does not work (security works) Unlock the driver's door with the key plate → Ignition switch ON wireless door lock unlock security release

*: Check with the driver's door window fully open to prevent the key from getting stuck.

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Vehicle speed auto door lock settings

Vehicle speed auto door lock settings

Vehicle speed auto door unlock operation

With the driver's door closed,
remove the key plate after turning
IG S/W OFF→ON→OFF

⇩

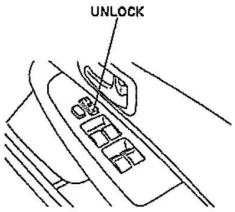
driver's door closed →開

↓

Perform the UNLOCK operation 5 times in 5 seconds with the driver's door control switch (for manual activation)

Д

close the driver's door



Vehicle speed auto door lock return operation

With the driver's door closed,
remove the key plate after turning
IG S/W OFF→ON→OFF

↓

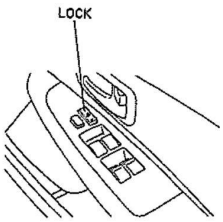
Driver's door closed open

↓

Perform the LOCK operation 5 times in 5 seconds using the driver's door control switch (for manual activation)

Д

close the driver's door



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troubleshooting

How to proceed with troubleshooting

(1) Check according to the applicable chart from the malfunction phenomenon list. If multiple problems occur, troubleshoot starting with the one with the lowest chart number.

How to read the flowchart

(1) Perform inspection starting from number 1 given to the work title.
(2) If there is a number in the result, proceed to the corresponding number. (3) If the results indicate ~defect, take corrective action and check the phenomenon again. After approval, it will end.

<Reference> The terms in each flowchart are abbreviated as follows.

- MPX body computer... MPX ECU
- MPX master switch...Master SW
- MPX switch (each regulator switch) ... MPX SW
- Ignition switch...IG SW
- Wire harness...W/H
- ~Switch...~SW

List of malfunction phenomena

door control switch				Applicable chart or cause of problem
Manual operation		key interlocking		
all door locks	All doors unlocked	all door locks	All doors unlocked	
O	O	X	O	1
X	O	O	O	MPX master switch failure
X	O	X	O	2
O	O	O	X	3
O	X	O	O	MPX master switch failure
O	X	O	X	4
Auto door lock function does not work				5
The auto door lock function repeatedly locks even when all doors are locked (4 times)				6
Key removal prevention function does not work				7
When IG OFF ON, the room lamp flashes and the vehicle speed auto door lock does not work.				8

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circuit figure

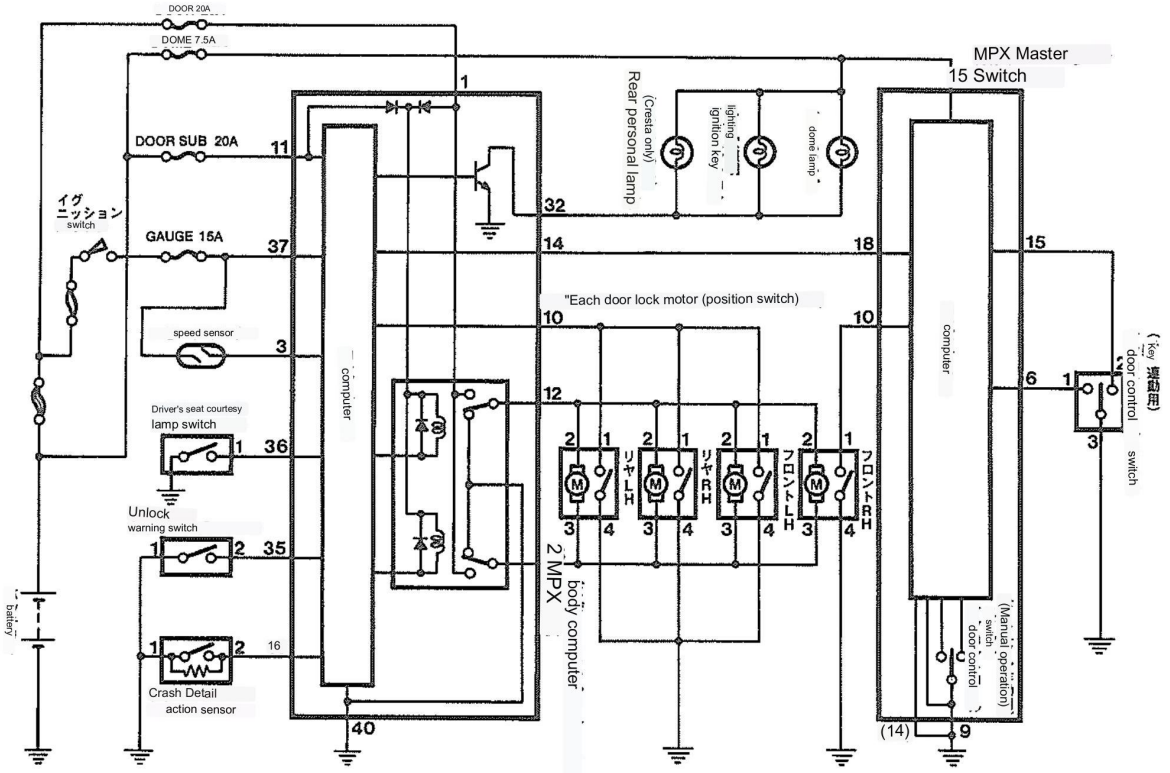

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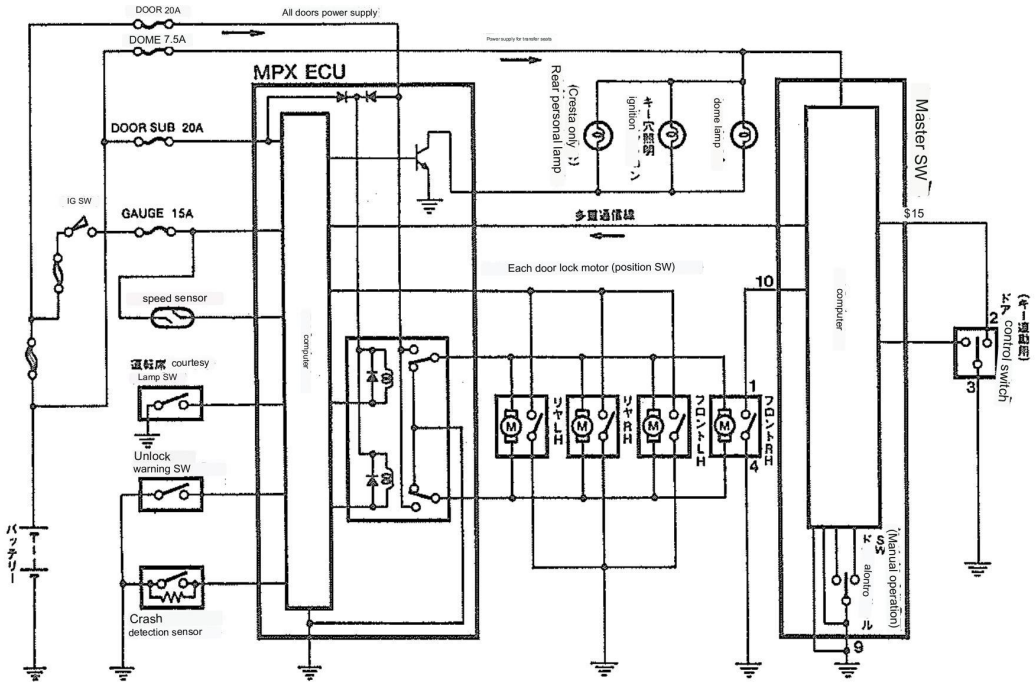
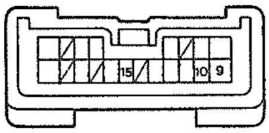
chart 1



Master SW



Door control SW (for key interlocking)

Door lock motor (position SW)

	work title	inspection Guidelines/Standards	result
1	Disconnect the master SW connector		After work go to 2
2	Key movement SW system continuity check	・Master SW Vehicle side connector between terminals 9 and 15 Standard driver's door key cylinder neutral position...No continuity Driver's door key cylinder lock position...with guidance	Go to YES-5 To NO-3
3	Disconnect the door control SW (key interlocking) connector of the driver's door lock ASSY.		After work,
4	Door control SW (for key interlocking) individual inspection	・Door control SW side connector Between terminals 2 → 3 Standard Driver's door key cylinder neutral position...No continuity Driver's door key cylinder locked position...Continuity exists NO-Door control SW (for key interlocking) Defective	go to 4 YES W/H (Master SW~ Door control SW (for key movement) Defective
5	Driver's door lock position SW system continuity check	・Master SW Between terminals 9 and 10 of the vehicle side connector Standard Driver's door locked state... ・No conductor Driver's door unlocked state...Continuity exists	YES - Master SW defective to NO-6
6	Disconnect the door lock motor connector of the driver's door lock ASSY.		After work go to 7
7	Driver's door lock position SW individual inspection	• Door lock motor side connector terminal 1 to 4 terminals Standard Driver's door locked state...No continuity Driver's door unlocked state...Continuity exists	YES W/H (between master SW and door lock position SW) Defective NO - Door lock ASSY (Position SW) Defective

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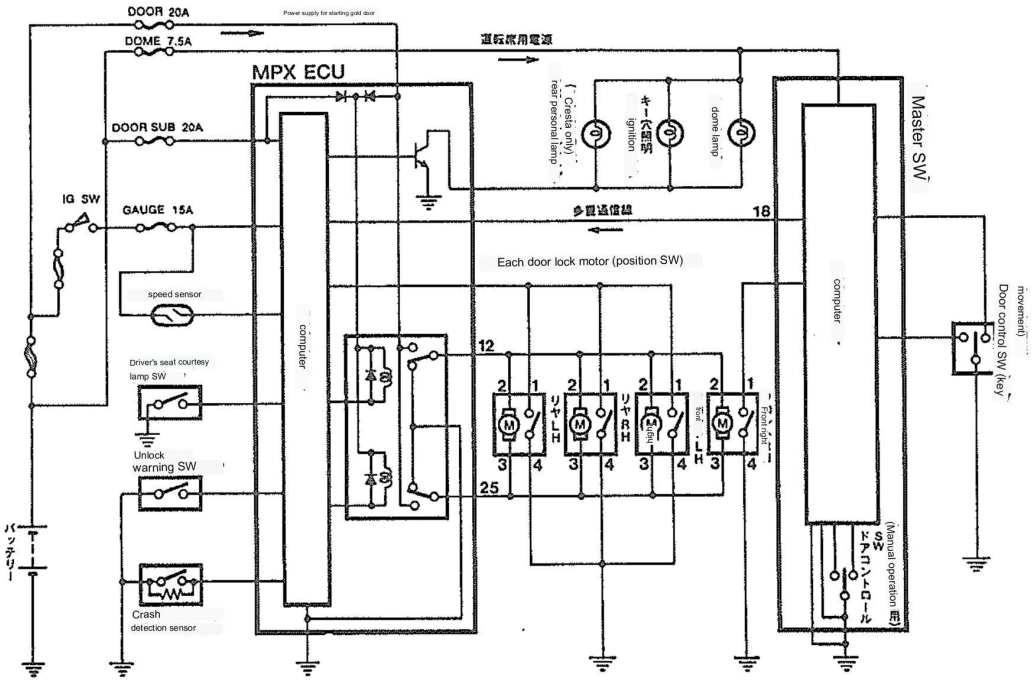
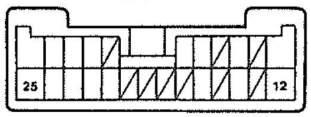
chart 2



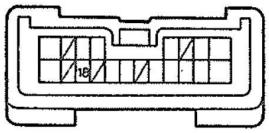
MPX ECU

Connector A

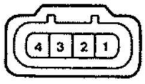


Connector B

Master SW



Door lock motor (position SW)



	work title	Inspection procedures/standards	result
1	Turn on IG SW		After work go to 2
2	Master SW function check	• Do the passenger seat and rear door power windows operate with the master SW?	Go to YES-3 [NO- Go to power window troubleshooting Go to
3	Remove master SW	(Connector connected state)	4 after work
4	Master SW door lock communication signal check	· Electric chart between master SW18 terminal and body ground Connect the star and set the voltage range · Do not operate the SW for more than 1 minute and check OV · When you operate the door control SW (for manual operation) to lock, does it repeat 1V or less and 5V or more (confirm that communication has resumed)	YES Go to 5 NO - Master SW defective
5	IG SW OFF, MPX ECU disconnect the connector of		After work go to 6
6	Door lock motor system inspection	Battery MPX ECU Vehicle side connector 12 terminals Battery MPX ECU Vehicle side connector 25 terminals ⇨ Lock operation	YES MPX ECU defective to NO-7
7	Individual inspection of each door lock motor	· Refer to unit inspection (P15-144)	YES-W/H (MPX ECU ~ Door lock ASSY) Defective NO - Door lock ASSY (Door lock motor) Defective

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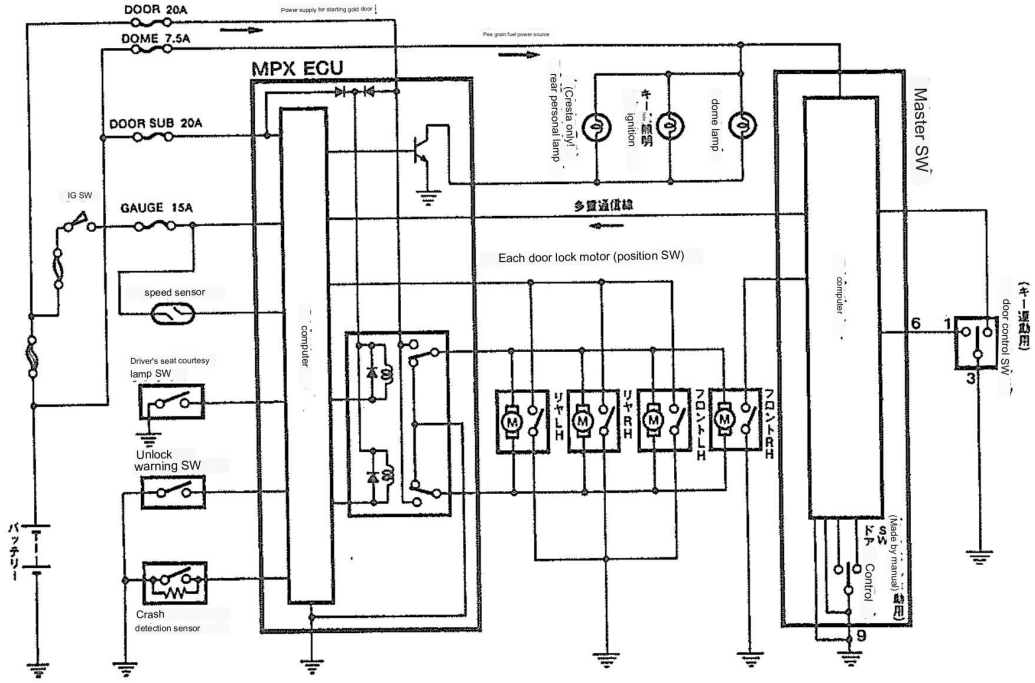
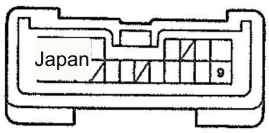
chart 3



Master SW



Door control SW (for key interlocking)

	work title	Inspection procedures/standards	result
1	Disconnect the master SW connector		After work go to 2
2	Key interlocking SW system Continuity check	・ Master SW Vehicle side connector between terminals 6 and 9 Standard Driver's door key cylinder neutral position...No continuity Driver's door key cylinder unlock position...with continuity	YES - Master SW defective to NO-3
3	Disconnect the door control SW (key interlocking) connector of the driver's door lock ASSY.		After work go to 4
4	Door control SW (for key interlocking) individual inspection	• Door control SW side connector between terminal 1 and terminal 3 standard Driver's door key cylinder neutral position...No continuity Driver's door key cylinder unlock position...with continuity	YES W/H (between master SW and key interlocking SW) defective NO-key interlocking SW defective

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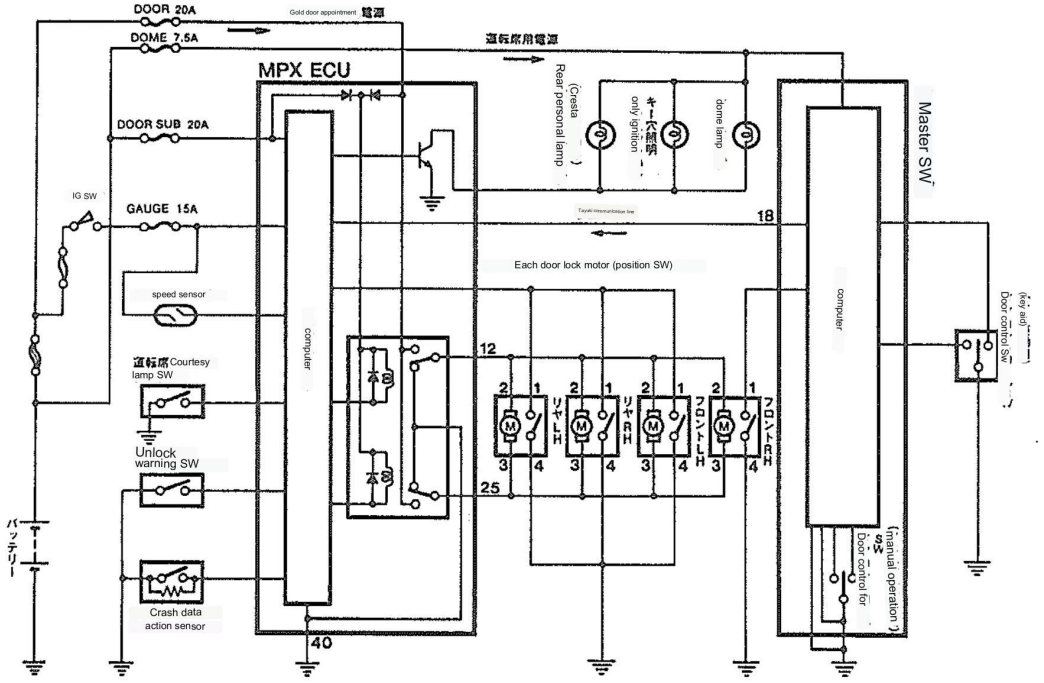
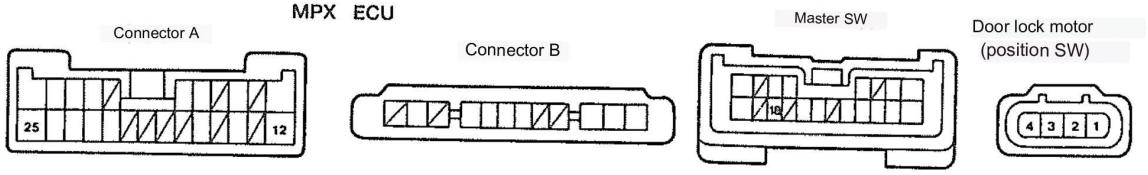
chart 4





	Work title	Inspection standards/criteria	Result
1	Turn on IG SW		After work go to 2
2	Master SW function check	· Passenger seat and rear door power windows are installed with master SW. Does it work?	Go to YES-3 Go to NO-Power window troubleshooting After
3	Remove master SW (connector connected)		work Go to 4
4	Master SW door lock communication signal check	· Connect an electrical tester between the master SW18 terminal and body ground to set the voltage range. · Check OV without operating SW for more than 1 minute · When door control SW (for manual operation) is operated to unlock, does it repeat 1V or less and 5V or more (confirm communication restart)	YES - Go to 5 NO - Master SW defective
5	IG SW OFF Disconnect MPX ECU connector		After work go to 6
6	Door lock motor system inspection	Battery MPX ECU Vehicle side connector 25 terminals Unlock Battery MPX ECU Vehicle side connector 12 terminals Operation Go to NO - 7	YES - MPX ECU defective
7	Each door lock motor	· Refer to unit inspection (P15-144)	YES W/H (MPX ECU ~ Door lock ASSY) Defective NO - Door lock ASSY (Door lock motor) Defective

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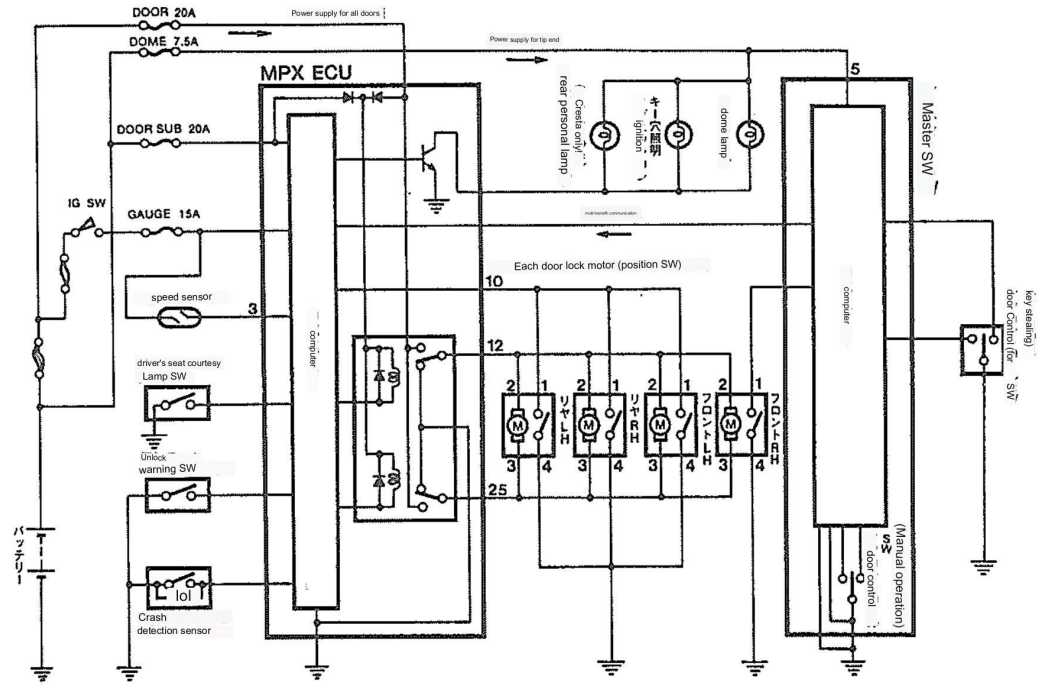
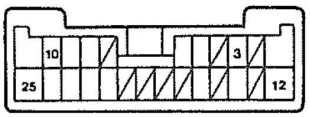
Chat — 5	Auto door lock function does not work



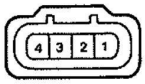
MPX ECU

Connector A



Connector B

Door lock motor (position SW)



	work title	Inspection procedures/standards	Result
1	Perform vehicle speed auto door lock recovery operation (Refer to vehicle speed auto door lock settings (P15-130))		After work go to 2
2	Auto door lock function check	- Driving a car with gold doors unlocked Standard: All doors are locked at speeds of 20km/h or higher	YES - End NO-3 (Gold door NG) Go to 7 (There is a working door)
3	Disconnect the MPX ECU connector		After work go to 4
4	Vehicle speed signal check	・ MPX ECU vehicle side connector 3 terminal between 蓄 body ground IGON, rear wheel (propeller shaft) Rotate slowly, repeating 1V or less and 5V or more	YES - Go to 5 NO-W/H (Combination meter ~MPX ECU) defective - Combination meter defective
5	Door lock motor system inspection	Battery MPX ECU Vehicle side connector 12 terminals Battery MPX ECU Vehicle side connector 25 terminals ⇨Lock operation	YES - MPX ECU defective To NO-6
6	Position SW signal check	・ MPX ECU vehicle side connector 10 terminals Between body and ground Lid ring Passenger seat and rear seats are ・・・・・・・・・・・・・・・all locked... ・ No conductor Either passenger or rear seat door is unlocked...	YES MPX ECU defective to NO-7
7	Inspection of the door lock motor (doors that did not lock)	・ Refer to unit inspection (P15-144)	YES W/H (MPX ECU12 terminal ~Between 2 terminals of door lock motor or between terminal 3 of the door lock motor and body ground) NO - Door lock ASSY Defective (door lock motor) Defective

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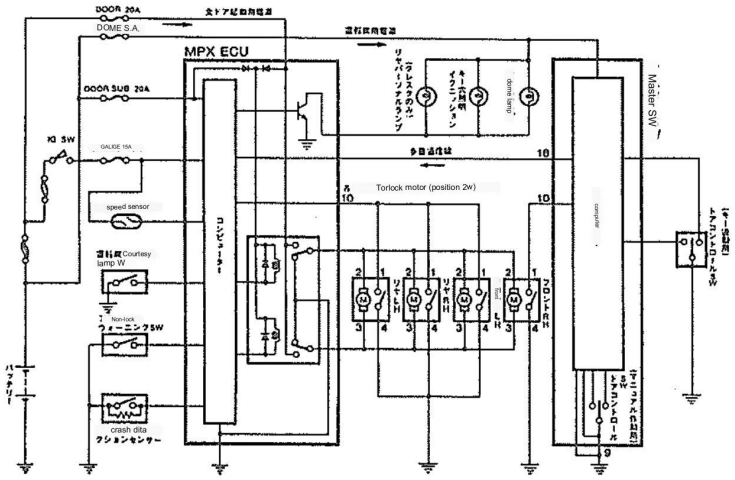
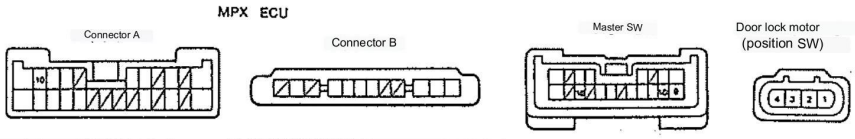
Chart 6 The	auto door lock function repeatedly locks even when all doors are locked (4 times)





	work title	Inspection requirements/criteria	result
1	Remove master SW (connector connected)		After work go to 2
2	Master SW Door lock Communication signal point	• Lock the driver's door lock knob · Connect an electrical tester between the master SW18 terminal and body ground to set the voltage range (the voltage is displayed as a per graph) · Check OV without operating the SW for more than 1 minute · When the driver's door lock knob is unlocked: 1V or less 5V or more (Confirmation of resumption of communication)	YES - Go to 3 Go to NO-7
3	Disconnect the MPX ECU connector		After work go to 4
4	W/H inspection for position SW	· MPX ECU Vehicle side connector terminal 10 Between body ground Standard Passenger seat and rear seat locked state · · · No conductor path Either passenger seat or rear seat is unlocked state Yes	YES to 5 NO-W/H (MPX ECU10 terminal~ (between door lock ASSY 1 terminals or between door lock ASSY 4 terminals and body ground) Defective
5	Disconnect the door lock motor connectors of the passenger and rear door lock ASSYs.		After work,
6	Door lock motor unit inspection (position SW inspection)	· Refer to unit inspection (P15-144)	go to 6 YES-7 NO - Door lock ASSY (position SW) defective
7	Disconnect the master SW connector		After work go to 8
8	Driver's door lock motor · Master system inspection (position SW inspection)	SW Vehicle side connector between terminals 9 and 10 Lid ratio Driver's door lock status / No continuity Driver's door unlocked state...with activation	YES - Master SW defective NO - Go to 9
9	Disconnect the door lock motor connector of the driver's door lock ASSY		After work Go to 10
10	Driver's door lock motor individual inspection	• Door lock motor side connector terminal 1 to 4 terminals Standard Driver's door locked state... No continuity Driver's door unlocked state... There is a road	YES W/H (Between master SW10 terminal and door lock ASSY1 terminal or between door lock ASSY 4 terminal and body ground) Defective NO - Door lock ASSY (Position SW) Defective

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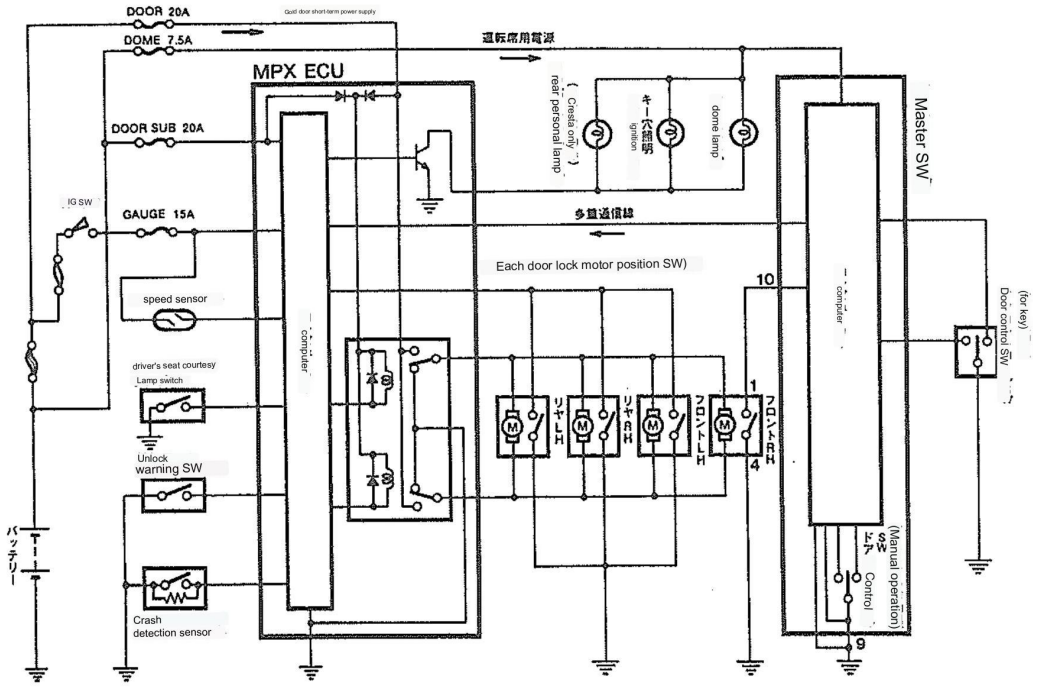
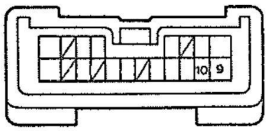
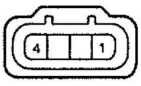
chart 7	Key removal prevention function does not work



Master SW



Door lock motor
(position SW)



	work title	Inspection procedures/standards	Result
1	Door lock function check	• Do you lock with the door control SW (for manual operation)	YES − 2へ NO - Go to chart 2
2	Door lock function check	or unlock with the door control SW (for manual operation)?	Go to YES3 NO - go to chart 4
3	Warning for forgetting to remove the Functional check	key・ Does the warning for forgetting to remove the key work properly?	Go to YES 4 NO - To troubleshoot the warning for forgetting to remove the key.
4	Disconnect the master SW connector		After work go to 5
5	Driver's door lock motor Master Inspection (position SW inspection)	SW Vehicle side connector Between terminals 9 and 10 Standard Driver's door locked state: No continuity Driver's door unlocked state: Continuity exists	YES Master SW defective To NO-6
6	Disconnect the door lock motor connector of the driver's door lock ASSY.		After work go to 7
7	Driver's door lock motor Driver's door lock motor side connector 1 terminal to 4 terminals Individual inspection (Position SW check)	standard Driver's door locked state...No continuity Driver's seat unlocked state...Continuity exists	YES W/H (Master SW~ Door lock ASSY) Defective NO- Door lock ASSY (Position SW) Defective

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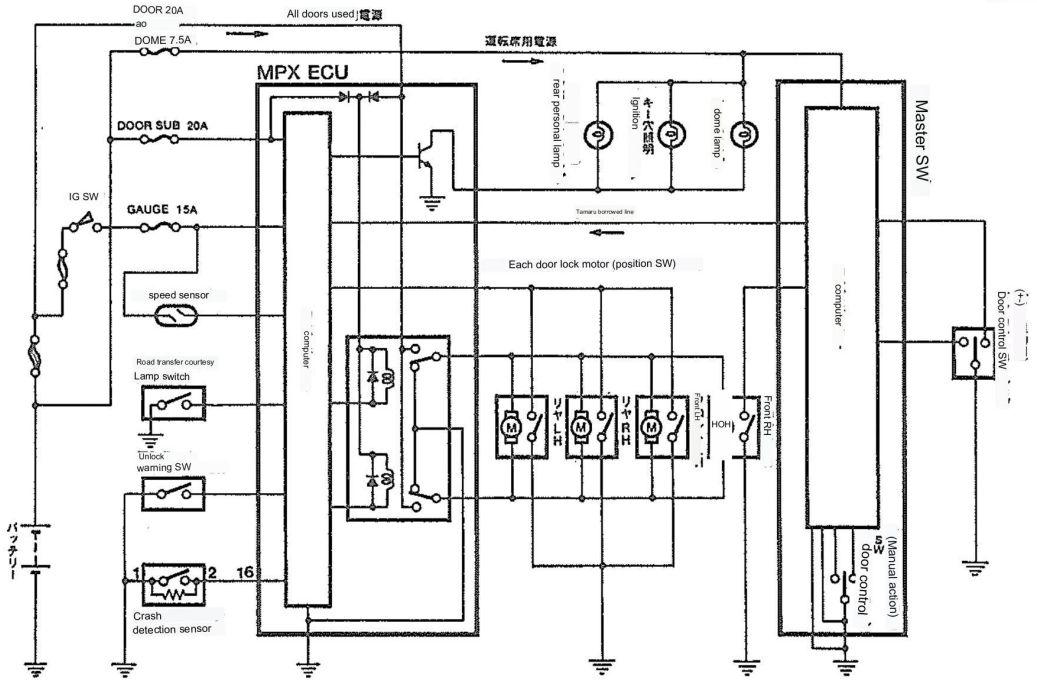
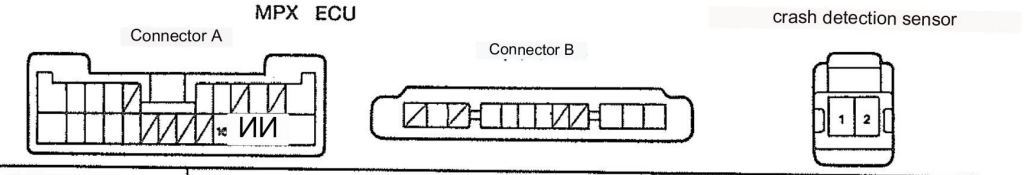
Chart 8 When	IG OFF ON, the interior lamp flashes and the vehicle speed auto door lock does not work.





	work title	Inspection procedures/standards	result
1	Room lamp inspection	· Is the DOME fuse (15A) normal?	YES - Go to 2 NO - Fuse blown
2	Disconnect the crash detection sensor connector		Go to work 3
3	Crash detection sensor earth inspection	• Between crash detection sensor vehicle side connector 1 terminal and body ground With reference guide	YES - Go to 4 NOW/H (section shown on the left) Defective
4	Crash detection sensor voltage check	• Crash detection sensor vehicle side connector 2 terminals Body ground Reference IG ON Approx. 5V	Question YES Go to 5 Go to NO-6
5	Crash detection chute Sensor inspection	· Crash detection sensor between terminal 1 and terminal 2 Standard 400~460Ω	YES- MPX ECU defective NO Crash detection sensor defective
6	Disconnect the MPX ECU connector		After work go to 7
7	MPX ECU Crash Detection MPX tion sensor W/H inspection	• ECU Vehicle side connector Between 16 terminals and 2 crash detection sensor terminals conductor	YES - To 8 With reference NOW/H (section shown on the left) Defective
	8W/H short inspection	· No reference continuity between MPX ECU vehicle side connector 16 terminal and body ground	YES- MPX ECU defective NO-W/H (MPX ECU vehicle side connector terminal 16 to crash detection sensor 2 terminal) defective

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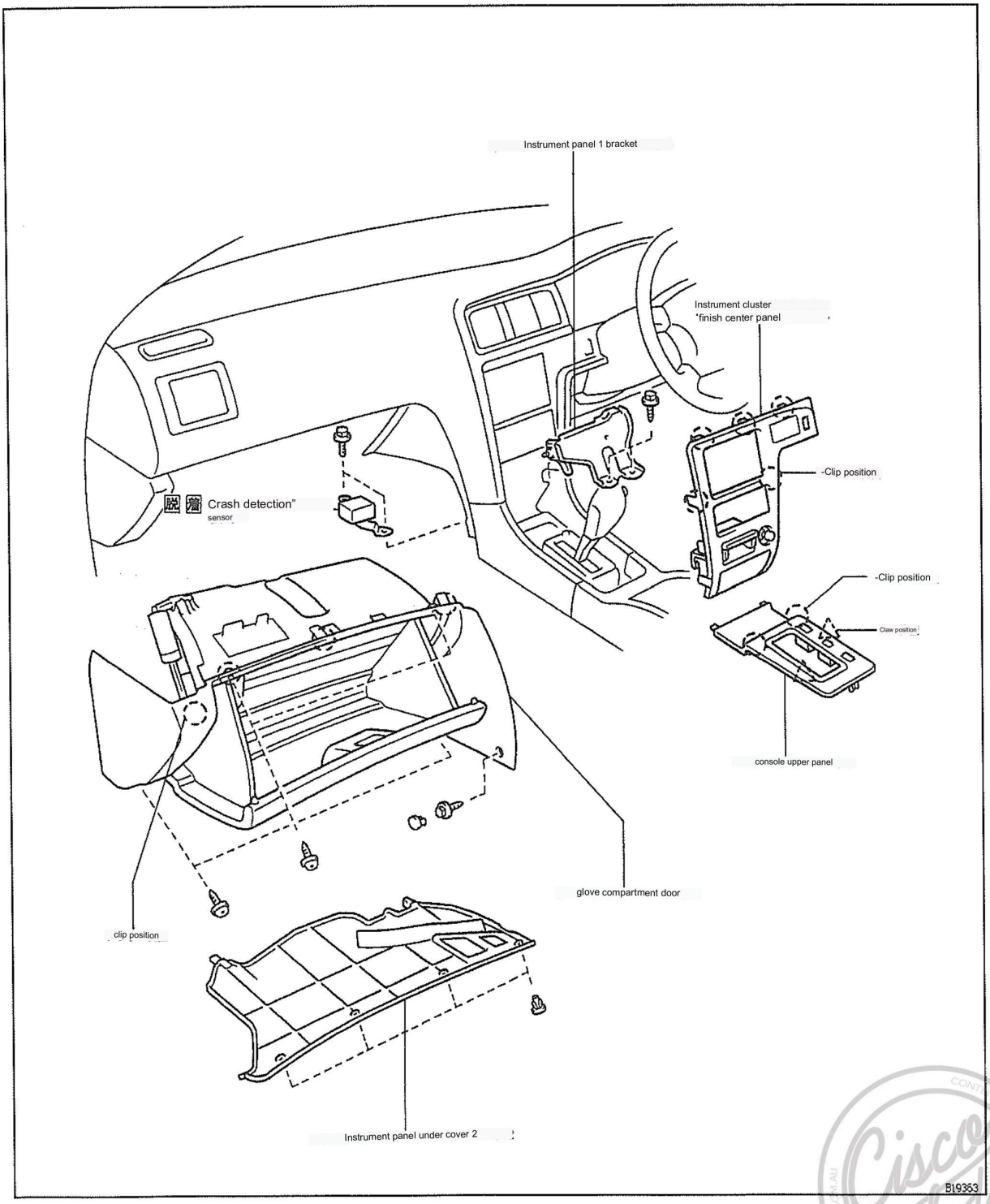
crash detection sensor

Cultivation configuration diagram



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timesbox

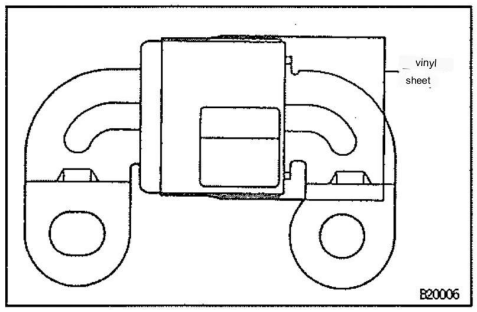
Points to note when attaching and detaching work

The crash detection sensor is a sensor that detects impact, so never drop it. Also, do not apply excessive force or shock to the sensor or connector.

1 Crash detection sensor removal

- Airbag sensor connector and airbag sensor Do not remove it.
- Do not apply excessive force or shock to the connector or sensor.
  - Never drop the sensor.

2 Installing the crash detection sensor Do not drop the sensor. If it is dropped, replace it with a new one even if there is no apparent abnormality. Also, if the sensor has been subjected to excessive shock, replace it with a new one.



(1) Attach the sensor to the airbag sensor bracket using two nuts.
T=9.0N·m {90kgf·cm}
(2) Connect the connector securely by hand.
(3) After installation, shake the sensor body and check that there is no looseness and that the vinyl sheet is not turned over or caught.

- Do not apply excessive force or shock to the sensor body or connector.
- Make sure the vinyl sheet covers the connector part.

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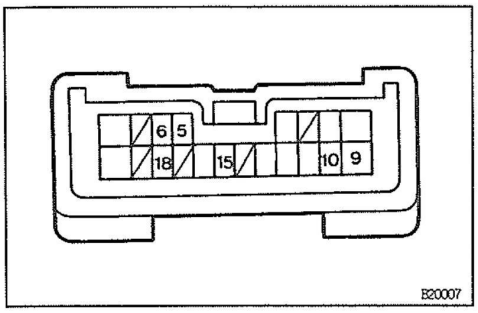

Single body inspection

Multiplex Network Master Switch (MPX Network Master Switch)

1 Operation check

(1) Check the conductivity and voltage between each terminal and body ground using the following inspection procedure.

Ru.

注意 • In the table, “disconnected vehicle side” means to disconnect the 車 connector and inspect the connectors on both sides. “Connector connection” indicates that the inspection is to be performed with the connector connected.

• After checking the “disconnected vehicle side”, check the “connector connection”.

standard

Measurement connector conditions	terminal number tester ⊕ ↔ Tester ⊖	item	point 検 条 subject	base 準	Problem location in case of non-standard
Connection disconnected vehicle side	5 Body...Earth (power supply voltage)	Voltage	Always	10～14V	Vehicle side
	6 Body earth (key interlock door control input)	Continuity	UNLOCK the driver's door key cylinder to the neutral position using the key plate. →	導No road → Yes	
	9 Body Earth (Earth)	Groove normal time		導通 can be	
	10 Body Earth (Driver's door lock input)	導通	Driver's door lock knob LOCK UNLOCK	No continuity → Yes	
	15 Body ground <Door control input for key interlocking)	Mizodori	Place the driver's door key cylinder in the neutral position using the key plate. → LOCK	導 No communication→Yes	
	18 Body ground (multiple communication bus output)	Normal time		No continuity (1kΩ or more)	
connector connection	18 body ground (multiple communication bus output)	*1 *3 Voltage	Leave it for more than 1 minute *2 After that, the master switch door control switch OFF LOCK	1V or less → 0V → 5V or more repeat	master switch
			After leaving it for more than 1 minute, turn the master switch door control switch OFF UNLOCK.	1V or less → 0V → 5V or more repeat	
			Leave for more than 1 minute*Keep rear seat door key cylinder in neutral position → LOCK with plate	Repeat 1V or less → 0V → 5V or more	
			Leave it for more than 1 minute *Keep the rear driver's door key cylinder in the neutral position → UNLOCK with the plate	1V or less → 0V5V or more repeat	
			Leave for more than 1 minute*2 Rear driver door lock knob LOCK → UNLOCK	1V or less → 0V Repeat 5V or more	
			Driver's door lock knob UNLOCK → LOCK after being left unattended for more than 1 minute	1V or less→ 0 Repeat V-5V or higher	

Since only the presence or absence of communication output in response to switch operation can be determined, it cannot be determined that the MPX master switch is normal even if it meets the criteria. * 2: If communication-related switches (switches in the MPX master switch, door control switch for key interlocking, position switch in the driver's door lock control motor, etc.) are left unoperated for one minute, communication will stop. *3: Check the voltage output using the bar graph display.

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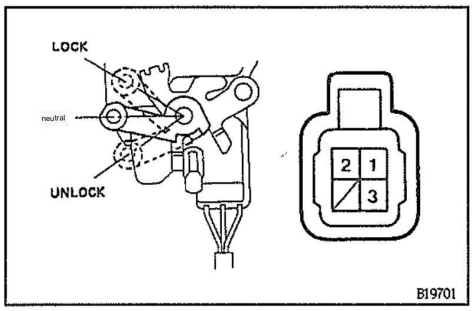


Door control switch (for key movement)

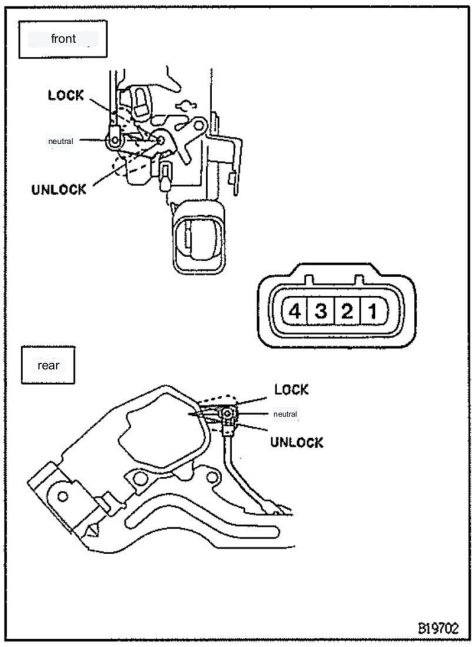
1 Continuity check

(1) Check continuity between each terminal at each position of the switch lever.

standard ○○ guidance available

Isako | switch	2	3	1
LOCK	○	○	
neutral position			
UNLOCK		○	○

JB3246



door lock motor

1 Door lock operation & continuity check

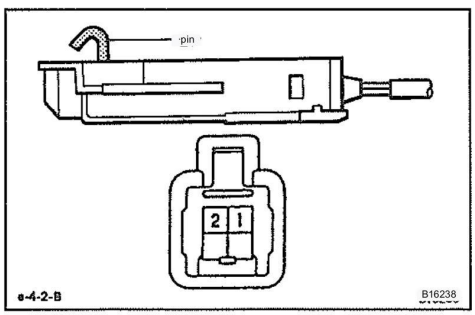
(1) When battery voltage is applied between the motor terminals inside the door lock

Check the operation of the door lock and the conductivity between the motor terminals.

Ru.

基 quasi

Contact 統	Made by motion
Battery +3 terminal battery 2 terminals	Door lock is LOCK 14 No continuity between terminals
battery 2 terminals battery 3 terminals	Door lock is UNLOCK Continuity between 14 terminals



Unlock warning switch

1 Continuity check

(1) Check continuity between connector 1 and 2 terminals.

Standard When the pin is not pushed in...No continuity

When the pin is pushed in...Continuity is present

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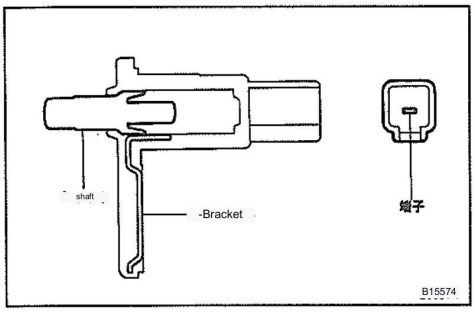
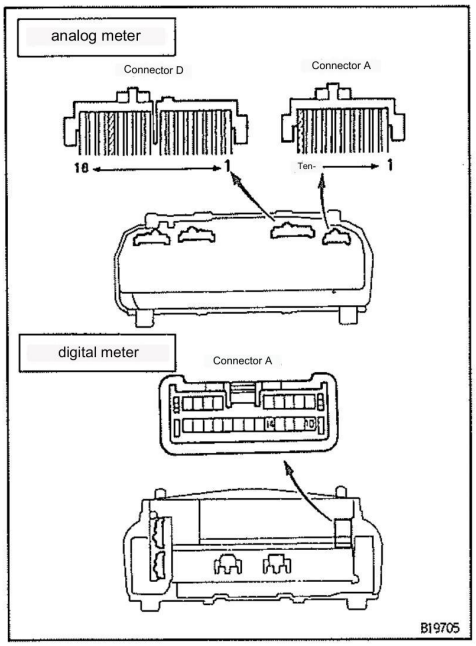


courtesy lamp switch

1 Continuity check

(1) Check continuity between connector 1 terminal and switch bracket.

Standard When the shaft is not pushed in...Continuity exists When the shaft is pushed in, there is no continuity



Speed sensor (in combination meter)

Ignition switch ON, connector connected

Inspection to.

1 Operation check

(1) Remove the speedometer sensor on the transmission side

vinegar.

(2) When the speedometer sensor shaft is rotated slowly

Each terminal of the connector on the back of the combination meter

Check the voltage between the

Type of meter	Inspection terminal
analog meter	A10-B13
digital meter	A10-A14

standard Repeat HILO changes 4 times during one rotation of the shaft

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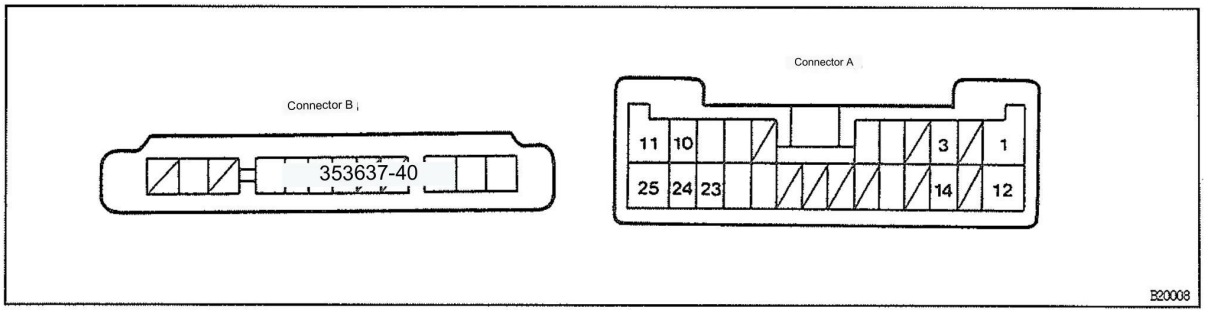
multiplex network body computer (MPX body computer)

注意 Since it is not possible to inspect the MPX body computer individually, pass/fail judgments will be made according to the troubleshooting flowchart.

<Reference> Shows the status of each terminal when the connector is connected.



standard

Terminal number tester ⊕ ↔ tester ⊖	item	point 検 条 subject	flower quasi
1 Body ground (power supply voltage)	Voltage	Always	10~14V
3 Body ground (speed sensor input)	Kasinosho	Ignition switch ON, rear wheel (propeller shaft) slowly 回転 1V	Below 5V repeat the above
10 Body ground (Passenger, rear seat door lock input) 11	guidance	Passenger seat and rear seat door lock knobs LOCK → Either door lock knob No UNLOCK	continuity Yes
Body ground (power supply voltage)	Voltage	Always	10~14V
12 Body ground (door lock motor output)	Voltage*2	Door control switch (for manual operation) OFF LOCK	0V→10~14V →0V
14 Body Earth (Multiple communication bus input)	Voltage*2	Leave for more than 1 minute Master switch door control switch OFF LOCK 1V or less Repeat *After 1 or UNLOCK	0V→ 5V or more
23 Body ground (wireless door lock input)	電圧*2	All doors closed, one door lock knob UNLOCK → door Control transformer 10~14V→OV 10~14V All doors are LOCKed when the mitter is ON.	0.5 seconds approximately
24 Body ground (wireless door lock input)	voltage 2	All doors closed, all door lock knobs LOCK→Door control transmitter ON 10~14V→OV 10~14V UNLOCK all doors with	seconds Approx. 0.5
25 Body Earth (Door lock motor output)	Voltage	Door control switch (for manual activation) OFF UNLOCK	0V→10~14V →0V
35 Body ground (Unlock warning input)	Voltage	Insert the key plate into the ignition key cylinder → remove it	0V→10~14V
36 Body ground (driver's courtesy lamp input)	Voltage	Driver's door closed → open	0V→10~14V
37 Body ground (power supply	Voltage	ignition switch OFF→ON	0V→10~14V
voltage) 40 Body ground (Earth)	Mizodori	"Always"	導通 can be

*1: Communication will stop if any communication-related switches (switches in the MPX master switch, door control switch for key interlocking, position switch in the driver's door lock control motor, etc.) are left unoperated for 1 minute.

*2: Check the voltage output using the bar graph display.

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T0048044

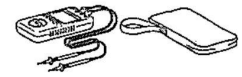
Multifunction remote control

preparation Goods

tool

precision screwdriver 15003		Door control transmitter cover spillage for

instrument

	09082-00030 toyota electrical tester	For single body point
	09083-00150 test lead set	For single point rod

Oils and fats Others

New or normal car door control transmitter 50001	Door control receiver inspection
New or normal battery (lithium battery BR1216) 52510	For door control transmitter inspection
2 dry batteries 1.5V 52501	For door control transmitter inspection

T0048045

Notes

1 Wireless door lock remote control operation <Reference>

Wireless door lock remote control operates under the following four conditions. It operates only when the conditions are satisfied.

(1) All doors are closed.

(2) The key plate is inserted into the ignition key cylinder. not present.

(3) The electric door lock operates normally.

(4) The reception function is not stopped by the security function.

2 Wireless door lock remote control working range

(1) The operating range changes depending on the person operating it and how it is held.

(2) The operating range is narrow due to the influence of the vehicle body shape, surrounding environment, etc. There may be places where the unit does not function properly or partially does not work. (3) Since weak radio waves are used, if there is strong radio waves or noise in the frequency used, the operating range may be narrowed or the product may not operate.

(4) When the battery is exhausted, the operating range becomes narrower or the product stops working.

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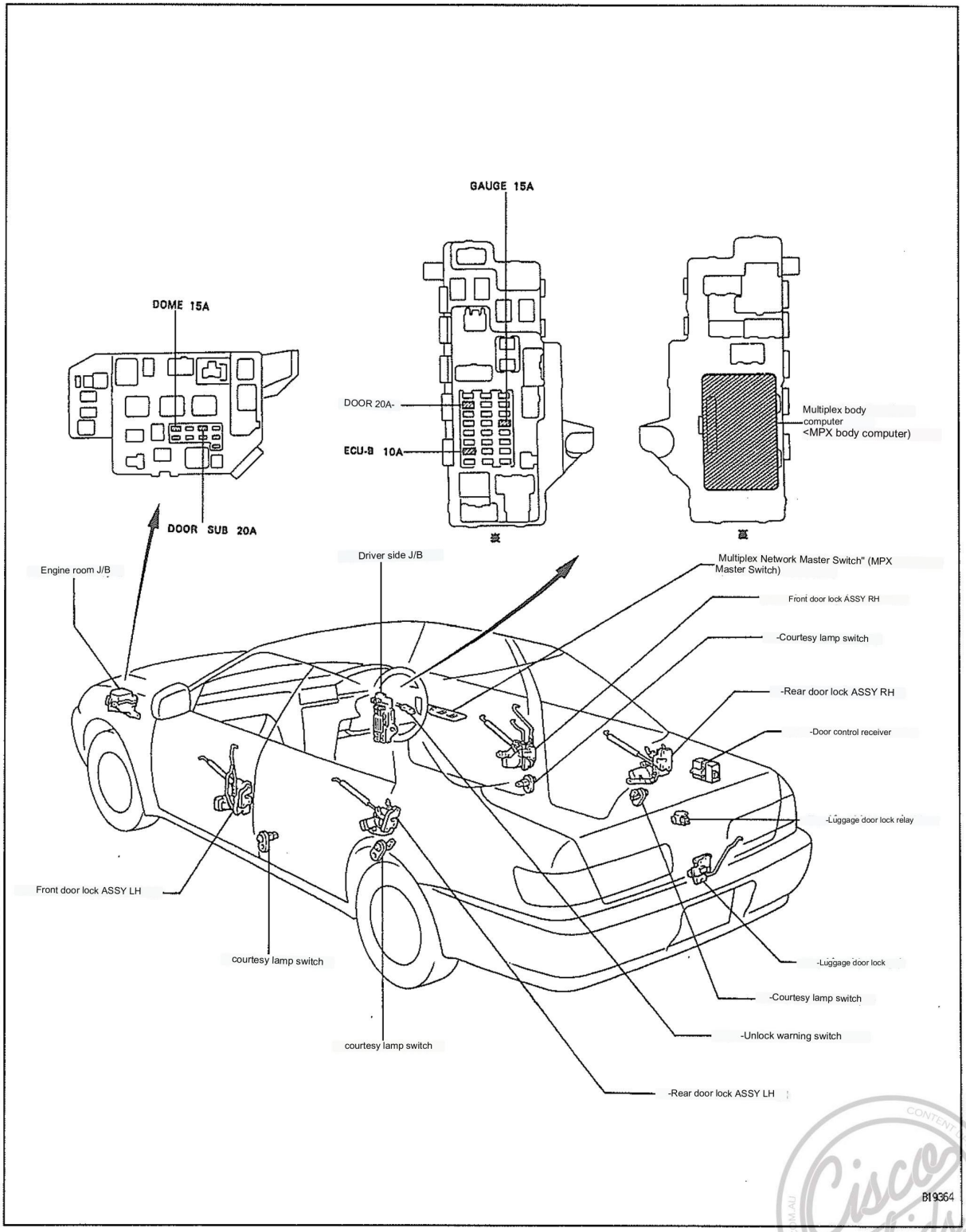
T0049648

Parts layout diagram



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TC049546

Functional check

wireless door lock remote control inspection

Functional details	point 檢 內 capacity
1 .Basic operation	Lock/unlock switch ON → Lock/unlock operation Trunk opener switch ON → trunk open operation
2. Auto lock operation	All doors closed All doors locked → Lock/unlock switch ON (unlock) → Leave for 30 seconds → All doors locked (2 times) (Auto door lock activated) → lock all doors →door open → Auto door lock does not work Ignition key →Keep in cylinder insert rate Within 30 seconds after unlocking
3. Prevention of erroneous switch operation	Insert the key plate into the ignition key cylinder → Lock/unlock switch ON → Lock/unlock does not work
4. Door lock chattering prevention	Hold down the lock/unlock switch → · Lock or unlock works once (does not lock/unlock continuously) · Release your finger and press after about 0.5 seconds → lock or unlock operation
5. Door lock repeatedly	Lock/unlock switch ON (lock) → Driver's door lock knob forcibly unlocked → Repeat lock operation twice
6. Security	Lock/unlock switch ON → Identification code (up to 4 types) Does not match → Do not operate remotely ·More than 10 different identification codes in 10 minutes → Reception function stopped →Driver's door unlock → door open Insert the key plate into the ignition key cylinder → Release of reception function stop state

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T0049849

troubleshooting

This troubleshooting only checks for malfunctions in the lock and unlock (remote) operations of the wireless door lock control. Items are listed.

In addition, if the problem occurs only in a specific region, Please carry out the inspection in the area where you are.

How to proceed with troubleshooting

(1) Check according to the applicable chart from the malfunction phenomenon list.

How to read the flowchart

(1) Inspection starts from number 1 given to the work title.

(2) If there is a number in the result, proceed to the corresponding number.

(3) If the results indicate ~defect, take corrective action and check the phenomenon again. After approval, end.

The terms in each flowchart are abbreviated as follows.

(*) · MPX Body Computer MPX

- ECU MPX Master Switch...Master
- SW MPX Switch (Each Regulator Switch)...MPX
- SW Ignition Switch...IG SW
- Wire Harness...W/
- H ~Switch...~ SW

List of malfunction phenomena

No Ingredients If current elephant	Applicable chart
Only the wireless function (remote control) does not work (prepare a normal transmitter in a new or same model car)	1

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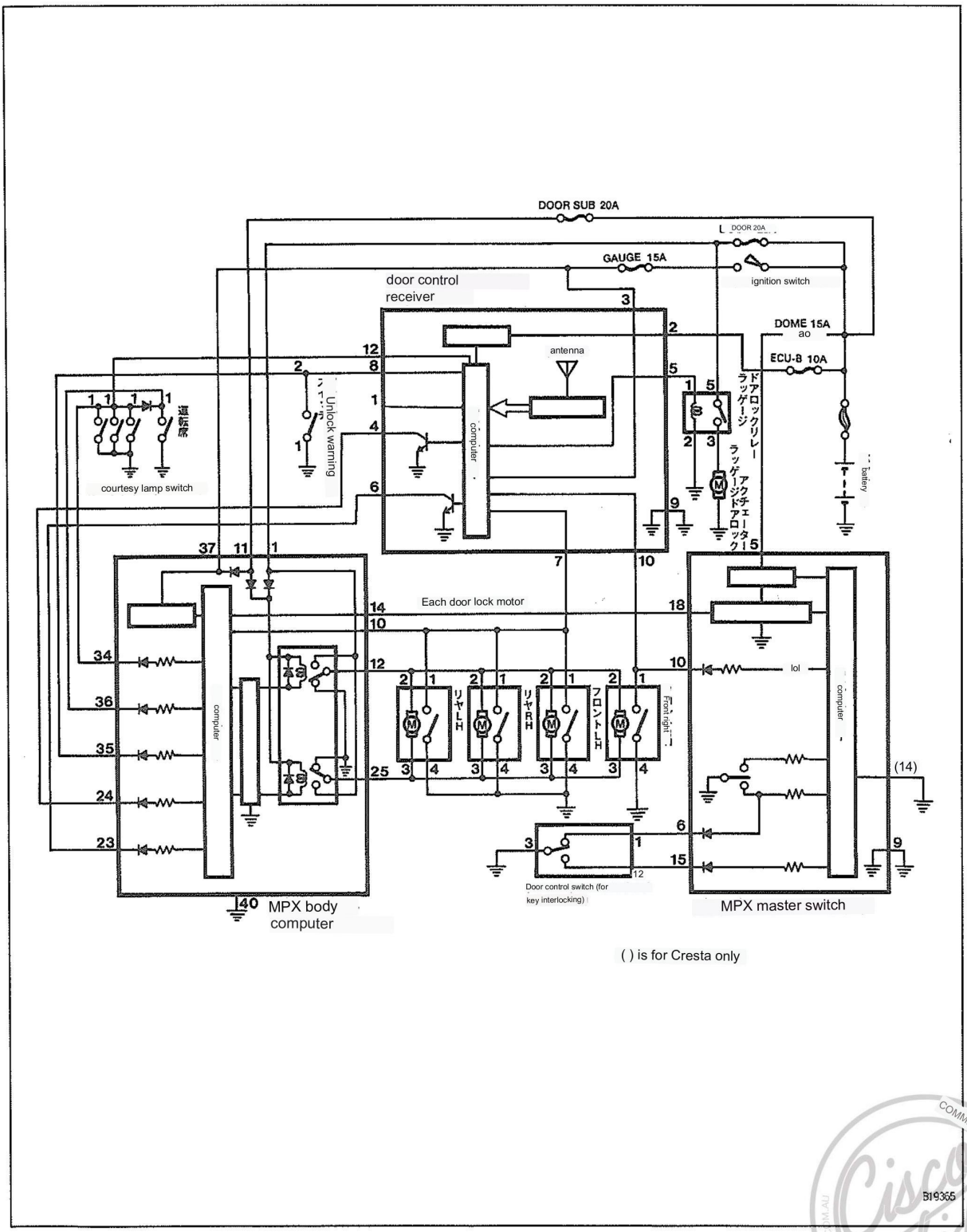
circuit figure



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times
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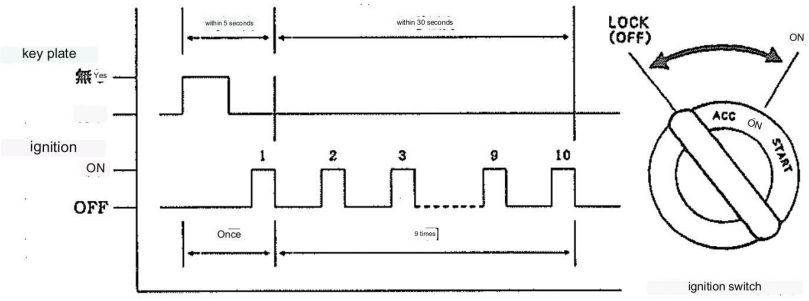
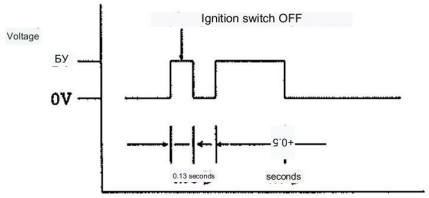
chart 1	Only the wireless function (remote control) does not work

	work title	point tree 内 capacity • standards	Conclusion Fruit
1	Return the vehicle to its initial state (if the following conditions are met) ① The key plate is not inserted into the ignition key cylinder ② All doors are closed (door warning is off) ⑨ All doors lock		After work go to 2
2	Basic function check	• Repeat standard operations 3 or more times Standard operation - Move approximately 1m away to the right from the driver's seat outside handle. · Point the transmitter key plate toward the vehicle and press the switch for about 1 second. Standard LOCK - UNLOCK operation after 3rd time	YES Normal (see notes) Go to NO-3
3	Transmitter battery check	· Replace the transmitter battery with a new or normal one and check if UNLOCK-LOCK operates under standard operation. (Performed at a techno shop where inspection is possible)	YES Battery failure Go to NO-4
4	Initialize the vehicle (see task 1 in chart 1)		After work go to 5
5	· Remove the door control receiver (connector connected) Connect an electrical tester between the door control receiver 1 terminal and the POD earth to check the voltage.Turn to 6 after completing the work.(The voltage is displayed as a part graph.)		
6	Enter self-diagnosis mode (do in the following order) ① After inserting the key plate into the ignition key cylinder once, remove it within 5 seconds. Turn the ignition switch OFF → ON → OFF once. ② After completing ①, turn the ignition switch OFF → ON → OFF 9 times within 30 seconds. Caution: If any of the conditions in ① and ② are not met, switch to normal mode. do <Reference> To exit self-diagnosis mode, turn the ignition switch from OFF to ON. 	After work go to 7
7	Self-diagnosis mode operation confirmation	Immediately after inputting the self-diagnosis mode, the electrical tester will output voltage. warm 	Go to YES-13 (entered self-diagnosis mode) Go to NO-8 (not in self-diagnosis mode)

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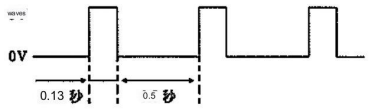
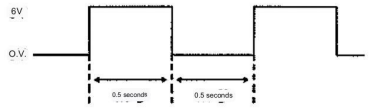
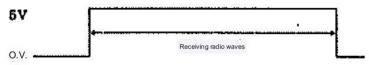
	work title	point 検 内 capacity ▪ 基 quasi	Conclusion Fruit
8	· Is the method to enter self-diagnosis mode correct?		Go to YES-9 Go to NO-6
9	Remove the electrical tester from the door control receiver (connector connected)		Go to 10 after work
10	Unlock warning SW check	• Between door control receiver 8 terminals and body ground Standard Insert the key plate into the ignition key cylinder → Remove it 0V→10~14V	Go to YES-11 NO-Unlock warning SW defective
11	Disconnect the door control receiver connector		After work Go to 12
12	Door control receiver power system and ground system inspection	· Door control receiver vehicle side connector 2, 3 and 9 terminals ◆◆Refer to individual inspection between body and ground (P15-161)	YES-Door control receiver defective NO-Vehicle wiring defect
13	Self-diagnosis mode confirmation	• Electrical output when each switch on the transmitter is held down Check the voltage output of the tester ① SV that received lock/unlock switch normal radio  ② Trunk switch received normal radio waves  ③ Identification code mismatch  <Reference> When the ignition switch is turned on during self-diagnosis mode, Return to normal mode.	① ② to output -14 Output ③ (all the same voltage output) to -15 No voltage output to -17.
14	Radio coverage check	· Is the radio wave coverage normal (1m from the vehicle end)?	Go to YES-16 NO Transmitter or receiver is defective <Reference> Check the radio range using another transmitter (normal product). If the coverage is normal, the transmitter is defective; if not, the receiver is defective.
15	Identification code registration function check	· Is it possible to enter the rewrite mode or addition mode for identification code registration? YES - Identification code registration Refer to Identification code registration (P15-155)	normal To NO-16
16	Inspection of door control receiver alone	· Refer to unit inspection (P15-161)	YES-Defective door control receiver NO-Defective vehicle marking
17	· If you keep pressing each terminal of a normal transmitter in a new or same model car, do they all output the same voltage?		YES Transmitter is defective NO Door control receiver is defective

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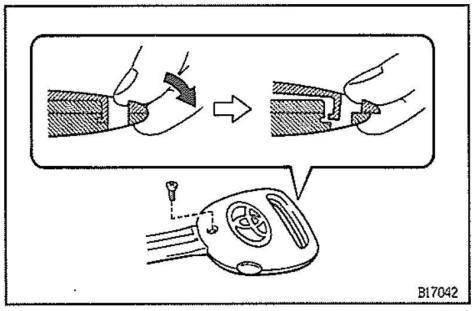
TOG48650

door control receiver & transmitter

注意 - Each part is a precision electronic component, so be careful when handling it.



Transmitter battery replacement

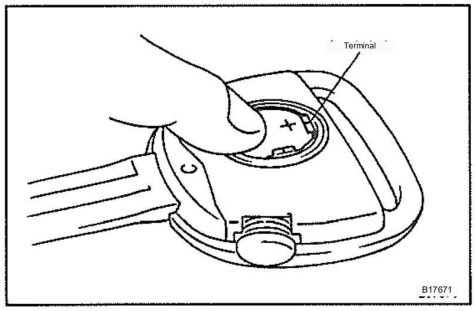
1 Transmitter battery replacement (1) Use a precision screwdriver to remove the screws and remove the cover.

Remove.

注意 Do not forcefully remove the cover.

〈参考〉 Press the cover in the position shown in the figure with your finger, and it will slide out against the key plate side.

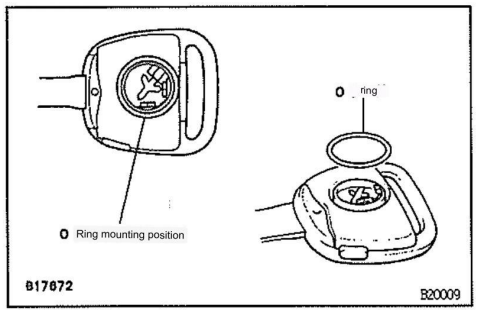
There is a gap, so I pry into that position.



(2) Gently press the position shown in the figure with your fingertip to remove the battery.

注意 - Do not press the terminal part with your fingers.

- If you forcefully remove the battery, the terminal section will become deformed.

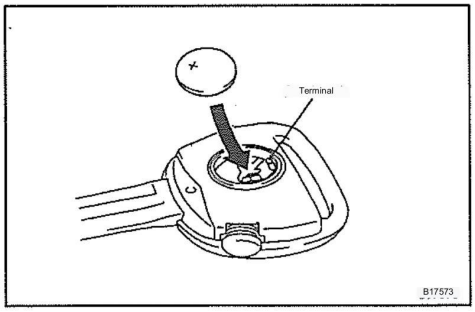


(3) Remove the ring.

(4) Place a new O-ring into the transmitter.

〈参考〉 O Ring, screw and battery are supplied as a set.

ing.



(5) Install the battery as shown. •Caution -

Place the battery with the ⊕ side facing up.

・ Do not deform the terminal.

(6) Attach the cover to prevent the ring from twisting or shifting.

Let's go.

(7) Tighten the screw.

注意 Loose screws may cause poor contact between the battery and the terminal.

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Door control receiver & transmitter exchange

注意 Door control receiver and transmitter are separate items

Since the equipment will be replenished at the time of replacement, it will be necessary to register the identification code when replacing the equipment.

1 Selection of work mode for identification code registration (1) Select which mode to implement from work modes ① to ④.

① Add mode

② Rewrite mode

③Prohibition mode

④Confirmation mode

(*) · In addition mode, the registered code remains and the newly received identification code is used. This mode is for registering additional codes, and is used when adding a transmitter. Furthermore, if the number of registered codes exceeds 4 types, the first code registered will be deleted.· Rewrite mode erases all registered codes and receives new codes. This mode registers only the identified identification code, and is used when replacing the transmitter or door control receiver.· Prohibition mode is a mode that erases all registered codes and prohibits the wireless door lock function, in case the transmitter is lost, etc. used for.

- Confirmation mode is a mode for checking how many types of identification codes are registered, and is used to check the number of registered codes when making additional registrations.

2 Registration of identification code

(1) Follow the flowchart on the next page to open the door control receipt. Register the transmitter identification code on the bar. - If the

注意 specified conditions are exceeded during the registration operation, normal operation will be resumed. - Up to 4 types of identification codes can be registered.

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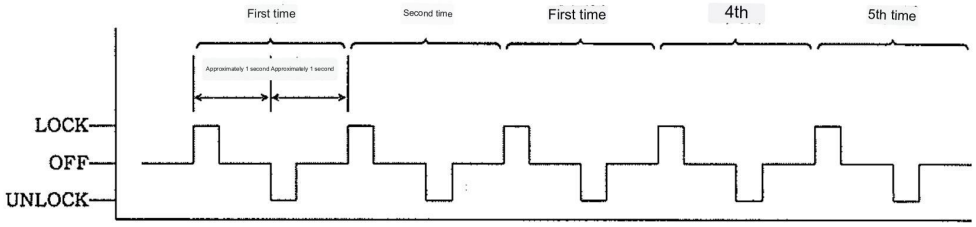
Start of registration of identification code

Bring the vehicle to the following state
① The key plate is not inserted into the ignition key cylinder.
② Driver's door is open (other doors are closed)
③ Driver's door is in UNLOCK state (other doors are in LOCK state)

Insert the key plate into the ignition key cylinder and then remove it

within 40 seconds

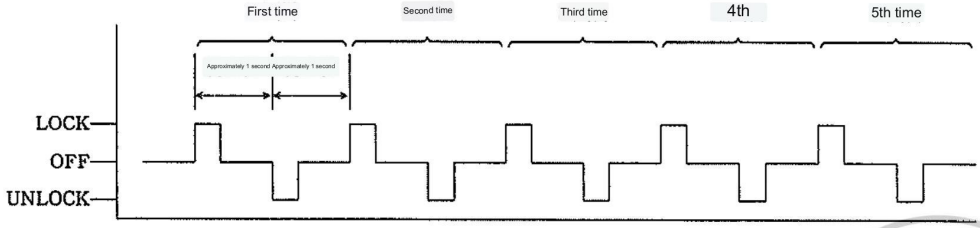
Perform LOCK-UNLOCK 5 times at approximately 1-second intervals using the door control switch (for manual activation).



Close the driver's door and then open it

within 40 seconds

Again, use the door control switch (for manual operation) to perform LOCK-UNLOCK 5 times at approximately 1-second intervals.



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turns back
[a person who
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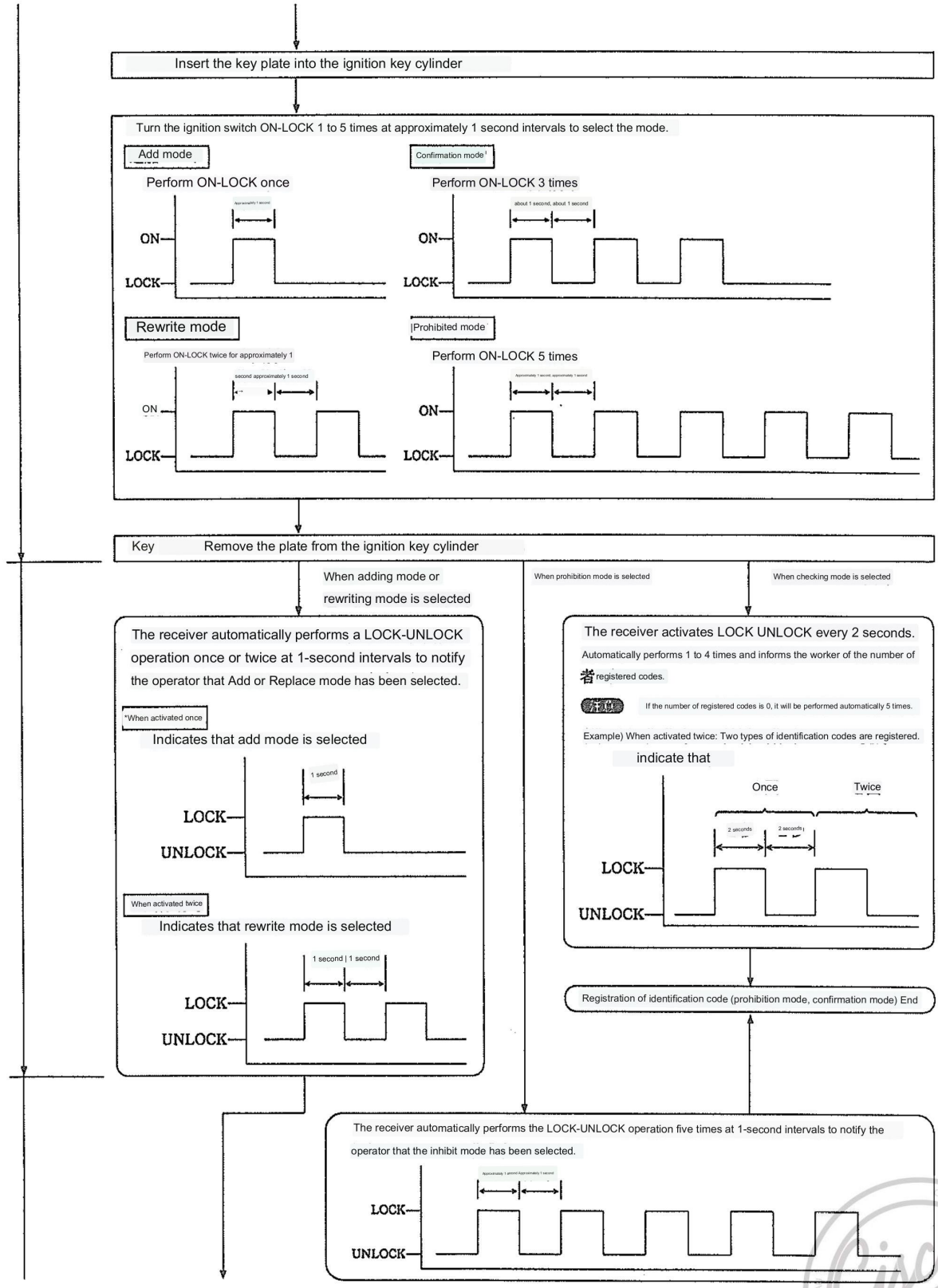

JB2031

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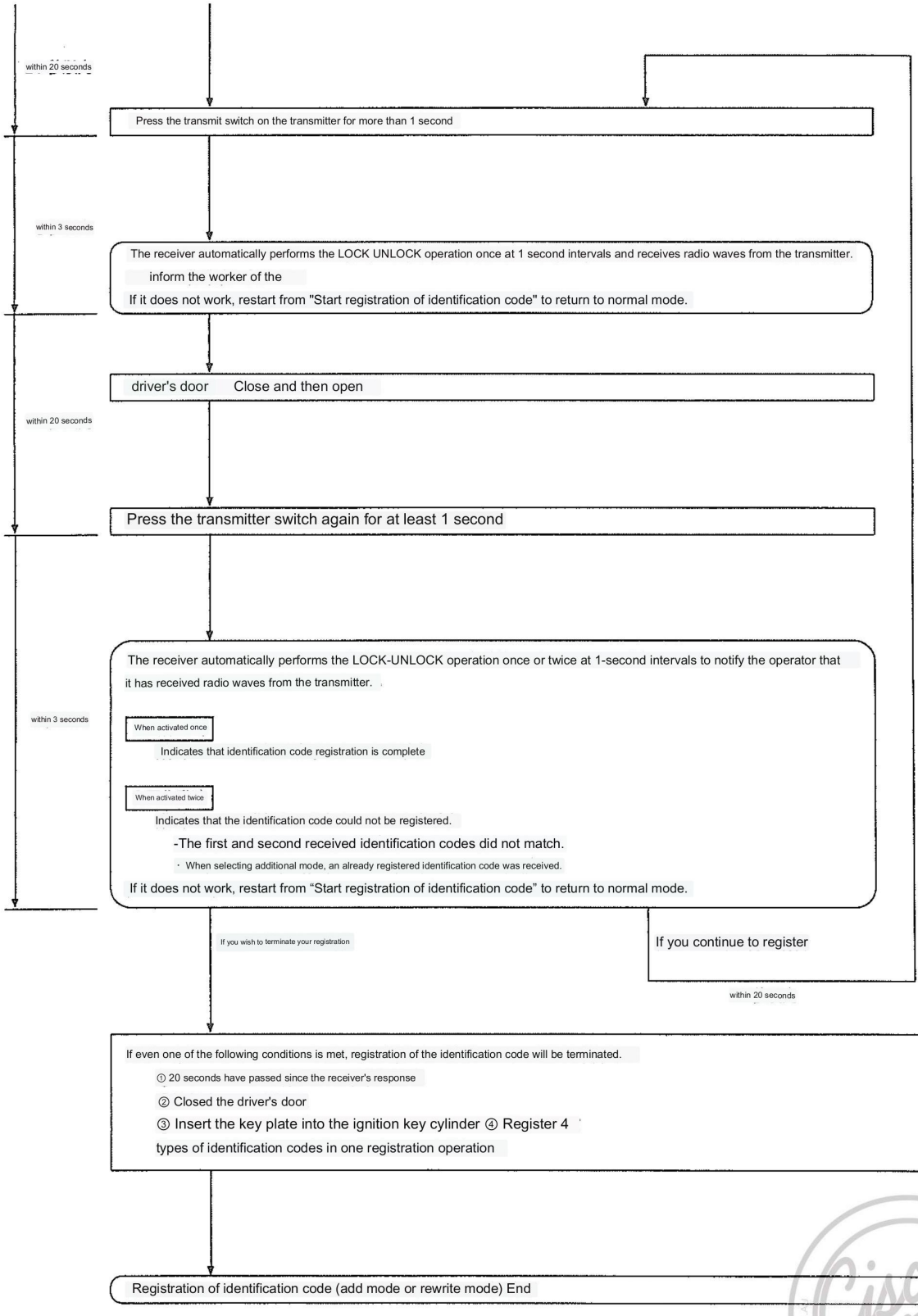

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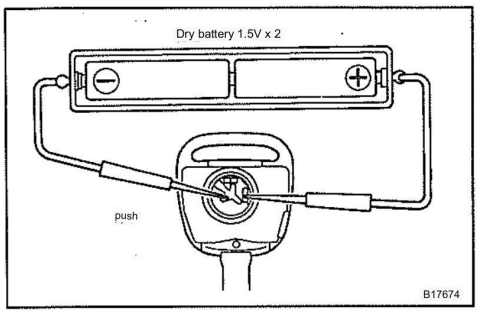
T0040651



Individual inspection

door control transmitter

1 Crop inspection

(1) Install a new or normal battery (lithium battery).

("Door Control Receiver & transmitter"

-Refer to "Transmitter Battery Replacement") <Reference> If a new or normal

battery is not available, connect two new 1.5V dry batteries in series, connect the battery to the terminal on the side of the battery compartment, and then connect the battery to the terminal on the side of the battery compartment. Connect it to the bottom terminal and connect it to the transformer.

Apply 3V voltage to the mitter.

(2) About 1m away to the right from the driver's seat outside handle.

position, point the transmitter key plate at the vehicle, and

Check the operation when pressing the transmitter switch on the side of the sender body.

do.

Standard: Ability to remotely control vehicle door locks.

<Reference> · The minimum operating distance varies depending on the person operating the device, how it is held, and the location.

· Since weak radio waves are used, the working distance may be shortened if there is strong radio waves or noise in the frequency used.

2 Check remaining battery capacity

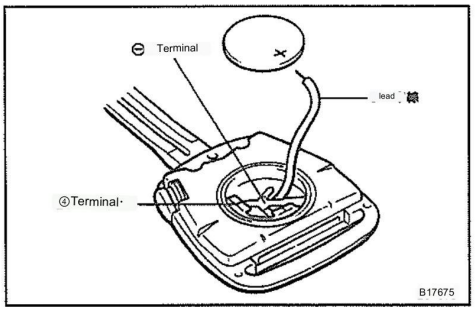
注意 · Be sure to use the Toyota Electrical Tester.

· Under no-load conditions, it is not possible to judge the quality of the lithium battery based on the voltage.

do not have. (Voltage of 2.5V or higher with no load until the battery capacity Display the tester.)

reaches 0.) If the transmitter is defective, you can check the remaining battery capacity.

There are cases where it is not possible.



(1) Use a precision screwdriver to remove the screws and remove the cover.

Remove.

(2) Remove the battery (lithium battery).

(3) Connect the lead wire to the transmitter terminal and connect the battery.

Attach the battery (lithium battery).

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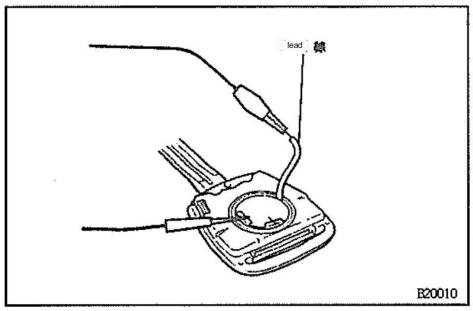
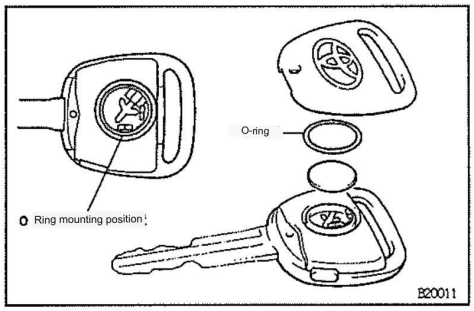




(4) Connect the + of the battery (lithium battery) to the tester's ④, and the lead wire to the Connect the star.

(Five) Press the transmit switch on the side of the transmitter for about 1 second.

(6)Press the transmission switch on the side of the transmitter body again to turn on the voltage. Inspection to.

standard 2.1V or more

注意 · If the temperature of the battery is low, accurate judgment of pass/fail cannot be made. If the voltage is below 2.1V, leave it in a place above 18°C for 30 minutes or more and then check again.

· 0.8 seconds after pressing the switch due to auto power off function Since the no-load voltage (2.5V or more) will occur, read the voltage beforehand. take.· Since high voltage may be displayed 1 or 2 times after leaving it, please apply it 3 times. Judgment is made by the voltage after the second.

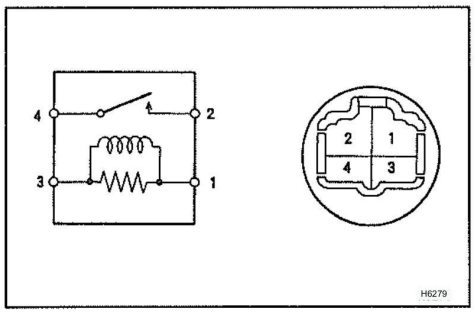
(7) Remove the lead wire.

(8) Set the battery (lithium battery) into the transmitter.

(9) Attach the cover so that the ring does not twist or shift.

〈参考〉 There is no need to replace the O-ring during inspection.

(0) Tighten the screw using a precision screwdriver.



luggage door lock relay

1 Continuity check

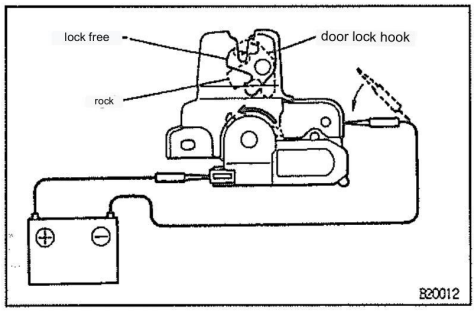
(1) Check continuity between each terminal of the connector.

standard Between 1 terminal and 3 terminals...Continuity exists

Between 2 terminals and 4 terminals...no continuity

(2) When applying battery voltage between terminals 1 and 3 of the connector, check continuity between terminals 2 and 4.

Standard Continuity



luggage door lock actuator

1 Operation check

(1) Push the door lock hook into the locked position.

(2) When the + of the battery is connected to the connector and the + of the battery is connected to the door lock body, the actuator rotates and locks the door. Check that the hook is returned to the unlocked position. (3) Check that the actuator returns when the battery is disconnected.

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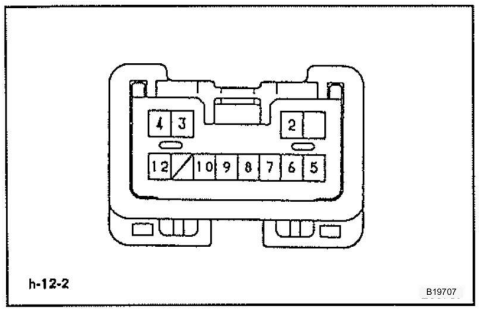

h-12-2 B19707

door control receiver

1 Door control receiver inspection

(1) Check continuity and voltage between each terminal and body ground using the following inspection procedure. In the table, “disconnected vehicle side” indicates that the connector is disconnected and inspected with the connector on the vehicle side, and “connected connector” indicates that the inspection is performed with the connector connected.

注意 After checking the “disconnected vehicle side”, check the “connector

standard

Measurement connector conditions	Terminal number tester ⊕ ↔ tester ⊖	item	point 检 条 subject	base	Problem location in case of non-standard
Connection disconnected vehicle side	2 Body ground (power supply voltage)	Voltage	Always	10~14V	car Both sides
	3 Body ground (power voltage)	Voltage	Ignition switch OFF→ON	0V→10~14V	
	5 Body ground (trunk opener output)	Jinji “Always		With guidance	
	7Body ground (Passenger seat, rear seat door lock position input)	Voltage	Rear seat and passenger door lock knobs LOCK → Either door lock knob UNLOCK	5V or more → DV	
	8 Body earth (unlock war pressure input)		Insert the key plate into the ignition key cylinder Mu→pull out	0V→10~14V	
	9 Body Earth (Earth)	導 Normal time		With continuity	
	10 Body ground (Driver door lock position input	Voltage	Driver's door lock knob LOCK → UNLOCK	5V or more → 0V	
	12 Body Earth (courtesy lamp input)	Voltage	All doors closed → Any door open	10~14V→0V	
connector connection	4 Body ground (wireless door lock output)	電圧	All doors open, all doors LOCK → transmitter ON All doors UNLOCK	10~14V-0V After about 0.5 seconds ⟶ 10~14V	* door control receipt MPX Podeco Computer
	5 Body ground (trunk opener output)	Voltage	Luggage compartment door closes Transmitter (trunk oven switch) turns on luggage control Approximately 0.5 seconds later, luggage compartment door opens	10~14V→OV ⟶ 10~14V bar or	
	6 Body Earth (wireless door lock output)	Voltage	All doors closed, all doors LOCK All doors UNLOCK → transmitter ON	10~14V→ OV 10~14V 0.5 seconds 急 ⟶ about	

*See "Troubleshooting" for pass/fail judgment.

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JB3256

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T0048952

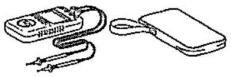
outer rear view mirror

Preparation items

tool

	09070-20010	roof molding remover	For outer rear view mirror removal

vessel

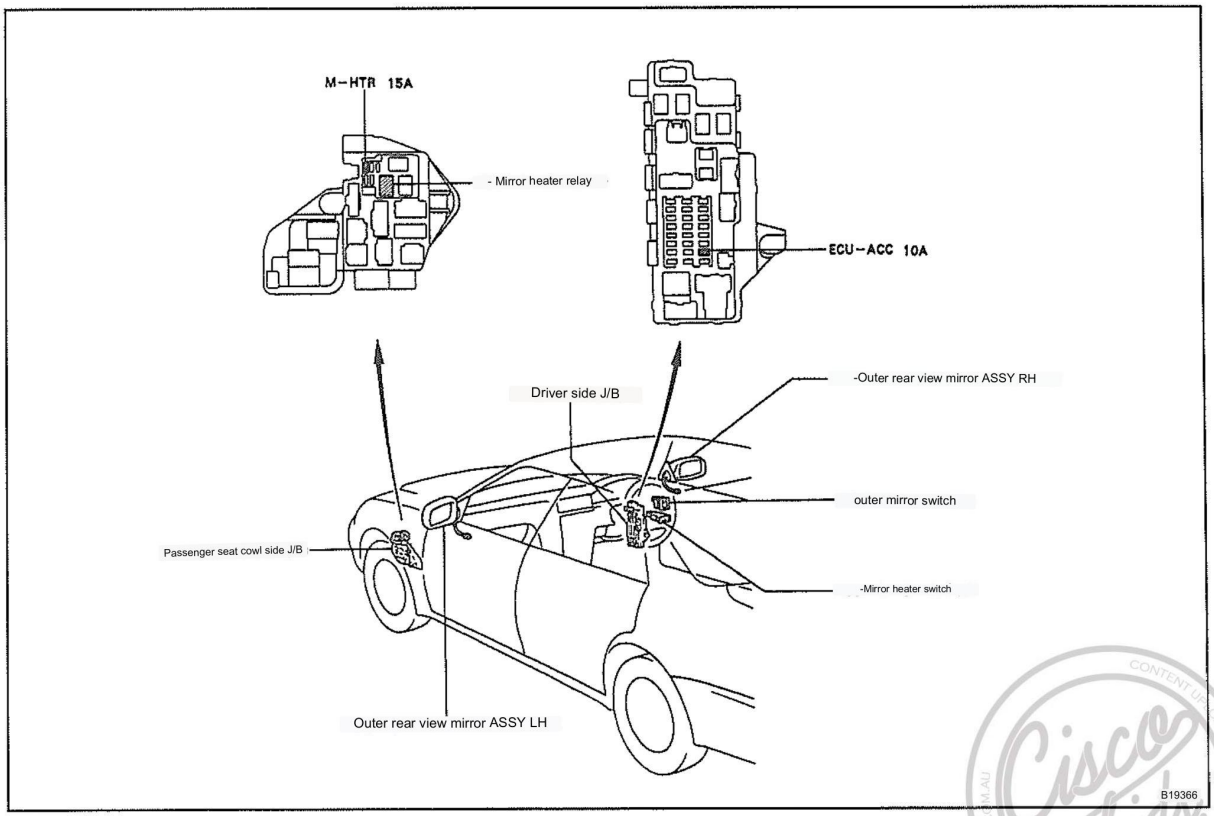
	09082-00030	toyota electrical tester	For individual inspection
	09083-00150	test lead set	Single body point school

Oils and fats/other

protective tape 53501		For preventing scratches

T0043353

Parts layout diagram



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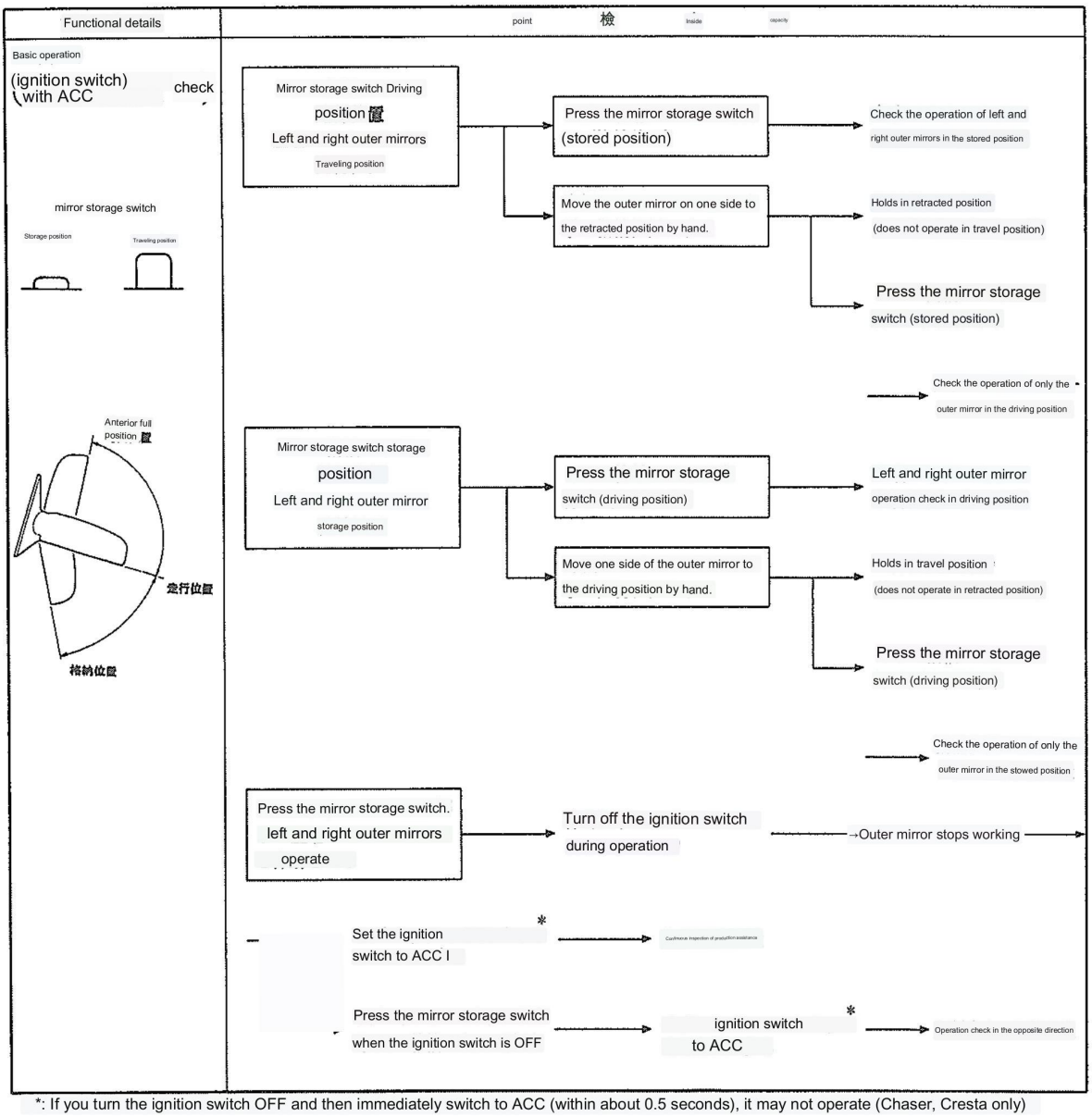
T0049004

Functional check

Electric folding door mirror function check



*: If you turn the ignition switch OFF and then immediately switch to ACC (within about 0.5 seconds), it may not operate (Chaser, Cresta only)

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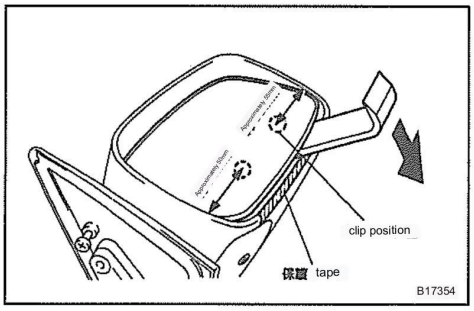
[Conveyance box]

T0048858

Outer rear view mirror -

Outer rear view mirror removal

· Refer to "Front & Rear Door (Front Door Disassembly: ① - ⑤)" for information on removing the outer rear view mirror.



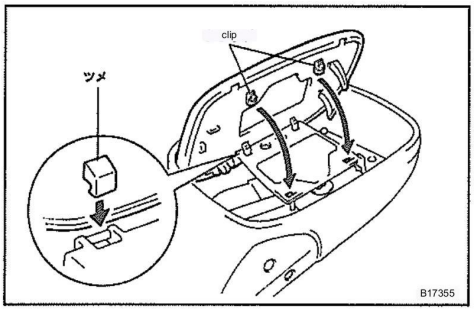
Points to note when disassembling and reassembling work (door mirror)

1 Removing the outer rear view mirror

(1) Apply protective tape to the mirror body.

(2) Using molding remover, remove the lower part of the mirror. Remove.

(3) Pull out and remove the mirror.

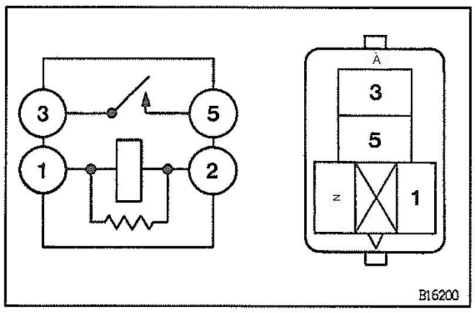


2 Outer rear view mirror installation

(1) Insert the upper tab on the back side of the mirror into the actuator

(2) hole. Set the mirror on the actuator section.

(3) Push in the bottom of the mirror to ensure that the two clips are engaged. Ru.



T0049856

Individual inspection

mirror heater relay

1 Continuity check

(1) Check continuity between each terminal of the connector.

standard Between 1 terminal and 2 terminals... Continuity exists

Between 3 terminals and 5 terminals... No continuity

(2) When battery voltage is applied between connector 1 and 2 terminals, Check continuity between terminals 3 and 5.

Standard Continuity

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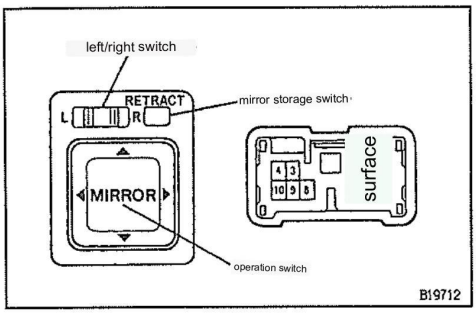

7 evening 131

1 Continuity check

(1) Check continuity between each terminal while operating the switch.

Left/right switching & operation Switch part ○—○導通あり

switching		ID 1	5	6	7	8	9	10
left side	Up	○		○			○	○
	under	○		○			○	○
	OFF							
	左		○	○			○	○
	right		○	○			○	○
OFF	Up			○				○
	under			○			○	
	OFF							
	left			○				○
	right			○			○	
right side	Up			○	3T2		○	○
	under			○			○	○
	OFF							
	left			○		○	○	○
	right			○		○	○	○

Mirror storage switch section ○—○導通あり

switching \ terminal number	3	4	9	10
OFF (return)	○	○	○	○
ON (store)	○	○	○	○

TB3312

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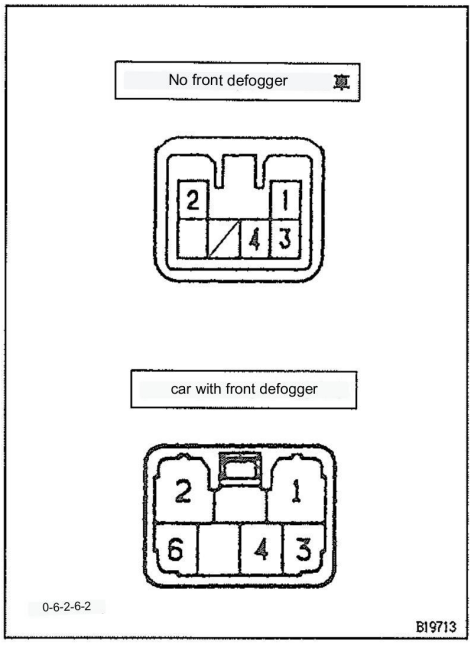


Mirror heater switch (cars with mirror heaters)

1 Continuity and operation check

(1) When the switch is pressed, check the conductor between the connector terminals.

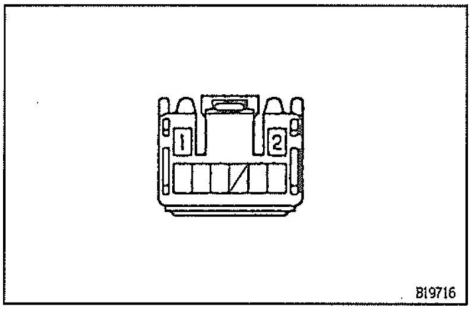
Standard between 2 terminals and 3 terminals...with conductor

(2) When the battery is connected to the 2nd terminal of the connector, and the battery is connected to the 3rd terminal (6 terminals for cars with a front defogger), Check that the operation indicator lights up. (1) Connect the battery

2 Illumination inspection

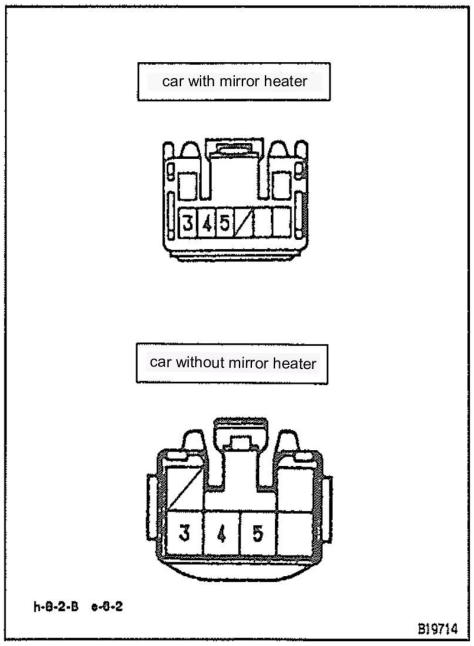
to 1 terminal of the connector, and the battery to 4 terminals of the connector. ⊖

Check that the illumination lights up when connected.



outer rear view mirror

1 Mirror heater operation check (cars with mirror heaters) (1) Check that the mirror surface becomes warm when the battery + is connected to the 1st terminal ⊖ of the connector and the battery is connected to the 2nd terminal of the connector.



2 Actuator operation check

(1) Check the operation when battery voltage is applied to each terminal.

基 準

Connection	Actuation direction
battery 3 terminals battery terminal	upward direction
battery +4 terminal battery 3 terminals	Under the direction
battery +5 terminal battery 4 terminals	left direction
battery +4 terminal battery 5 terminals	right direction

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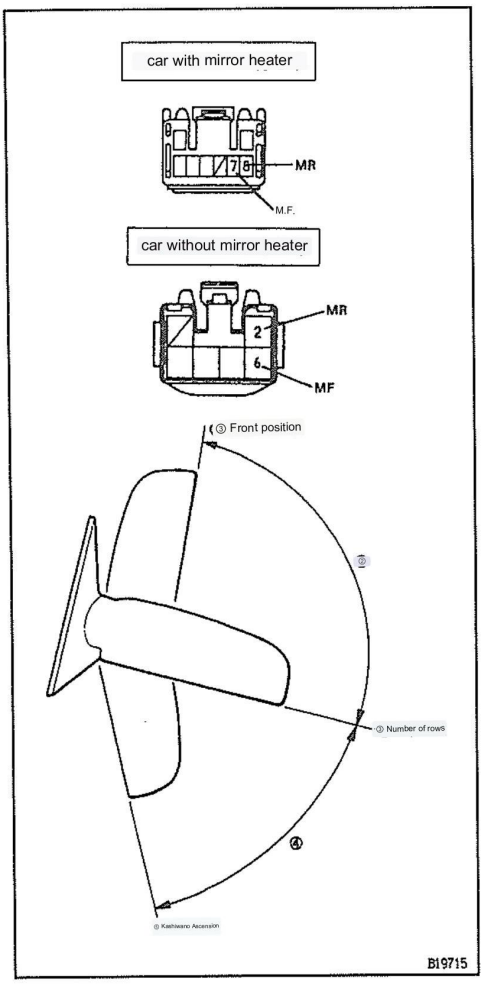

3 Inspection of storage motor operation (electric storage door mirror)

(1) Check the operation when applying battery voltage between each terminal.· When performing the same inspection repeatedly, turn off the battery voltage once. Then proceed in the same manner.

· Even if you move only the mirror body with the battery voltage applied, it will not work.

standard

① Front folding position

Connection	Operating direction
Battery + MR battery MF	Storage direction (Stops at storage position)
battery + MF battery MR	not working

② Between the forward folding position and the traveling position

connection	Operating direction
battery + MR battery MF	Storage direction (Stops at the retracted position)
Battery + MF · Battery MR	Front folding direction (Stops at the forward folding position)

③Travel position

insemination	Actuation direction
battery MR Battery MF	Writing direction (stops at storage position)
Battery MF Battery MR	not working

④ Between the traveling position and the storage position

connection	Operating direction
Battery MR Battery MF	Retracting direction (stops at retracted position)
Battery MF Battery MR	Return direction (stops at traveling position)

⑤ Storage position

insemination	Direction of production
Battery + MR Battery MF	not working
battery + MF battery MR	Return direction (stop at running position)

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T0040857

Warning for forgetting to remove the key system

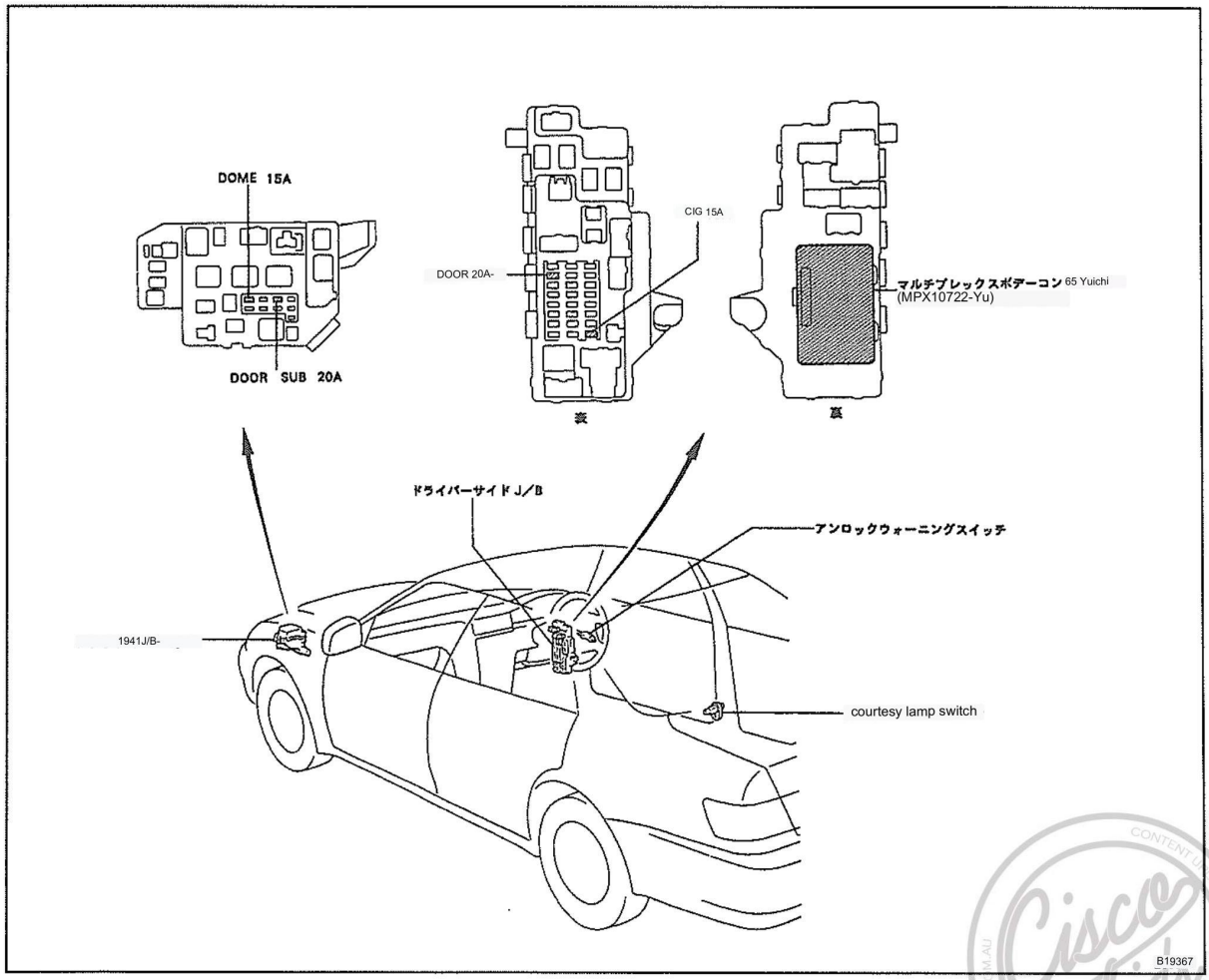
Preparation items

instrument

	09082-00030	toyota electrical tester	Each part is for use as a pointer.
	09083-00150	Test lead set	Each part is for use as a pointer.

T0049858

Parts layout diagram



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T0049650

Functional check

Warning function check for forgetting to remove the key

1 Operation check

Functional point item	point board Contents
Basic operation	IGｷｰ ﾙ Soyuｰ汇ｷ Insert the LOCK position Driver's door 閉 → driver's door (open) → ブザー (blowing sound) driver's door (closed) Ignition switch ON IG-Kyuuichika 5 ÷ｰ抜く → Primary ringing stops

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T0049061

troubleshooting

How to proceed with troubleshooting

(1) Check according to the applicable chart from the malfunction phenomenon list. If multiple defects occur, the one with the smaller chart NQ From there, troubleshoot.

How to read the flowchart

(1) Perform inspection starting from number 1 given to the work title.

(2) If there is a number in the result, proceed to the corresponding number. (3) If the results indicate ~defect, take corrective action and check the phenomenon again. After approval, it will end.

<Reference> Terms in each flowchart are abbreviated as follows.

- MPX body computer... MPX ECU
- MPX master switch...Master
- SW · MPX switch (each regulator switch)...MPX
- SW Ignition switch...IG SW
- Wire harness...W/H
- ~Switch... ~SW

List of malfunction phenomena

No If	Applicable chart
I forgot to remove the key and the warning buzzer does not sound.	1
The buzzer does not stop sounding even when the driver's door is closed (with the key plate inserted) The	2
buzzer does not stop sounding even when the IG SW is turned on (driver's door open)	3
Even if the key plate is removed, the buzzer does not stop sounding (when the driver's door is opened))	4

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circuit diagram

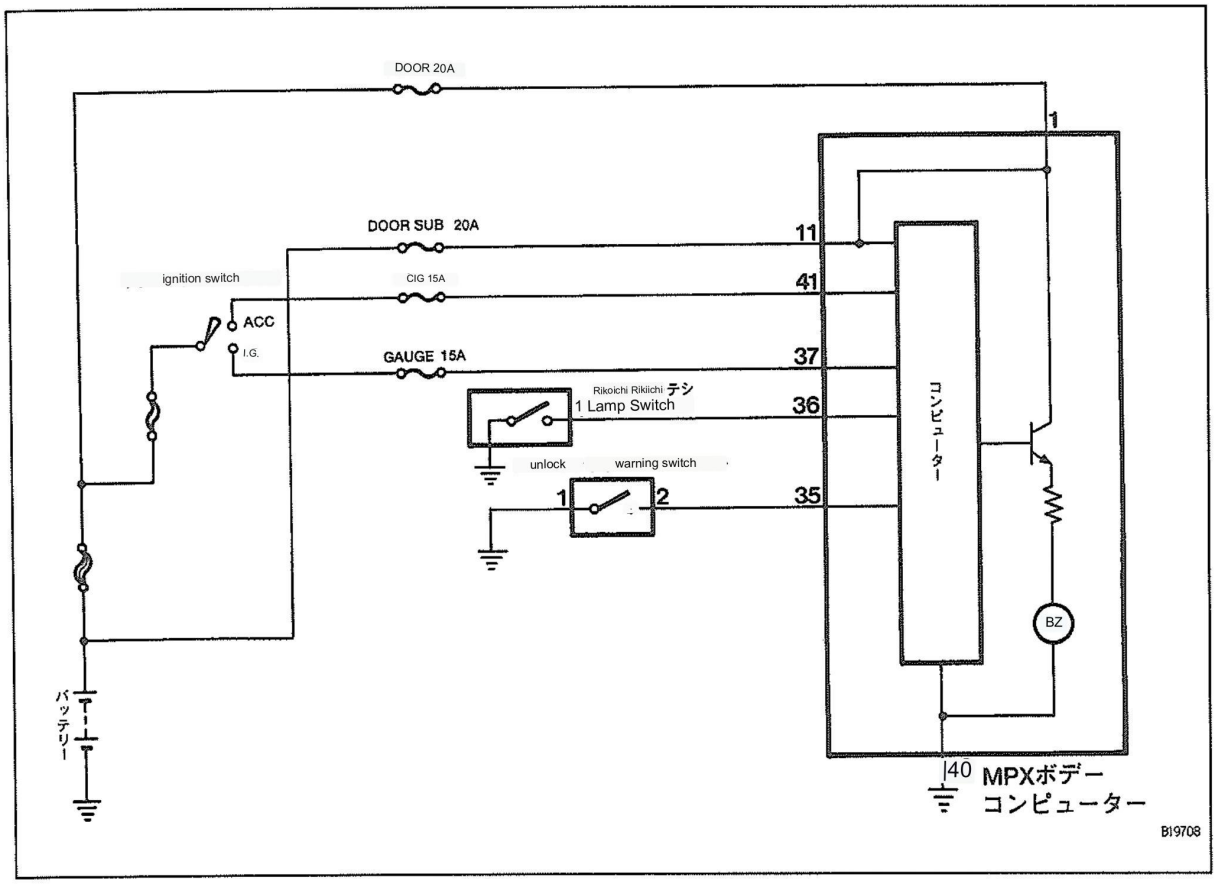

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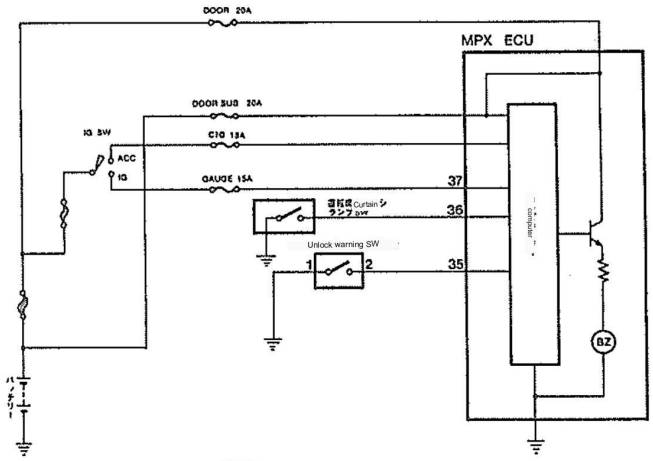
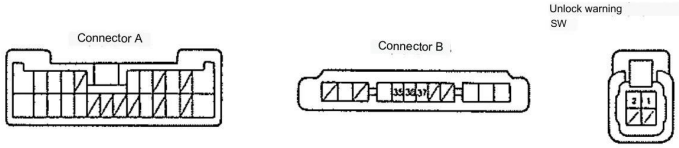
chart 1	I forgot to remove the key and the warning buzzer does not sound.



MPX ECU



	work title	Inspection requirements and standards	Result
1	Power window operation check	• Is the power window operating normally?	Go to YES 2 NO - Go to power window troubleshooting
2	With all doors closed, turn the room lamp switch to the DOOR position		After work go to 3
3	Illuminated entry inspection (door courtesy lamp SW inspection)	· When you open the driver's door, do the keyhole lighting and room lamp light up?	YES Go to 4 NO - Go to Key Illuminated Entry Troubleshooting
4	Unlock warning Disconnect the SW connector		After work go to 5
5	Unlock warning SW check	• Unlock warning Between 1 terminal and 2 terminals on SW side Standard Insert key plate...Conduit exists Do not insert key plate...No conduit	To YES-6 NO-unlock warning SW defective
6	Unlock warning SW W/H inspection	• Unlock warning SW Vehicle side connector 1 terminal Between body ground Standard connection exists	Go to YES-7 NOW/H (section shown on left) Defective
7	Unlock warning Connect the SW connector and disconnect the MPX ECU connector		After work go to 8
8	MPX ECU~Unlock Warning SW W/H Point	· MPX ECU Vehicle side connector terminal 35 Between body ground Standard Insert key plate... Continuity exists	YES - Go to 9 NOW/H (Unlock warning Between SW2 terminal and MPX ECU35 terminal) Defective
9	MPX ECU~ Courtesy lamp SW W/H inspection	· MPX ECU Vehicle side connector 36 terminals Body ground Standard driver's door open••••••With conductor	YES to 10 NO-W/H (Driver's courtesy lamp SW terminal to MPX ECU36 terminal) Defective
10	Power system inspection	· MPX ECU Vehicle side connector 37 terminal Body ground 間 reference IG SW OFF... OV	YES - MPX ECU defective NO - Power supply system defective

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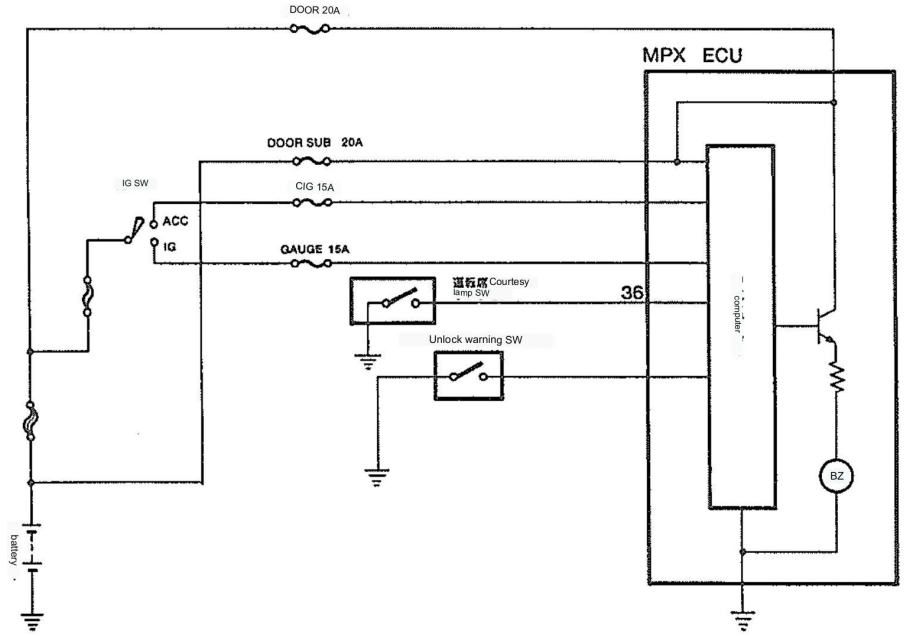
Chart 2 The buzzer does not stop even when the driver's door is closed (with the key plate inserted)



MPX ECU

	work title	Tenpaku guidelines and standards	Result
1	Set the room lamp SW to the DOOR position		After work go to 2
2	Key illuminated entry inspection (courtesy lamp SW inspection)	• Room lamp and keyhole lighting will be turned on approximately 15 seconds after the door is opened and fully closed. does the light go out?	YES - Go to 3 NO — Troubleshoot key illuminated entry
3	Disconnect the MPX ECU connector		After work go to 4
4	MPX ECU~Door courtesy lamp SW W/H inspection	• MPX ECU Vehicle side connector 36 terminals Body ground 基準 Driver's door closed...None	YES - MPX ECU defective NO - W/H (MPX ECU36 terminal ~Courtesy lamp (between SW terminals) Defective

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time case
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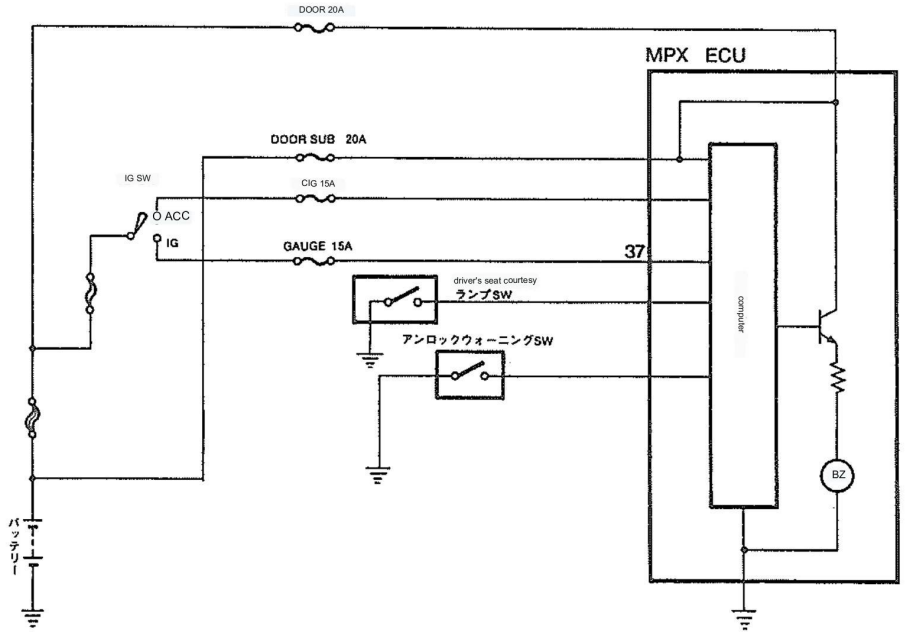
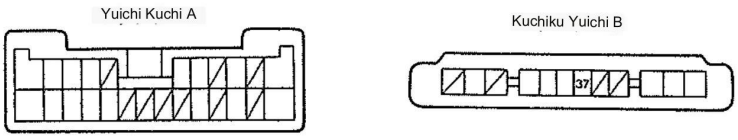
U one volume 3	IG SW E ON IT No.1 blowing sound (driver's seat 7 closed)



MPX ECU



	work title	point 検 要 territory ·Basic quasi	Conclusion Fruit
1	All details of MPXECU		After work 2~
2	Power system W/H inspection	• MPX ECU vehicle side entrance 37 terminals ↔ one complete one question Standard IG ON 10~14V	YES-MPX ECU defective NO-W/H GAUGE~ MPX ECU37 terminal) defective

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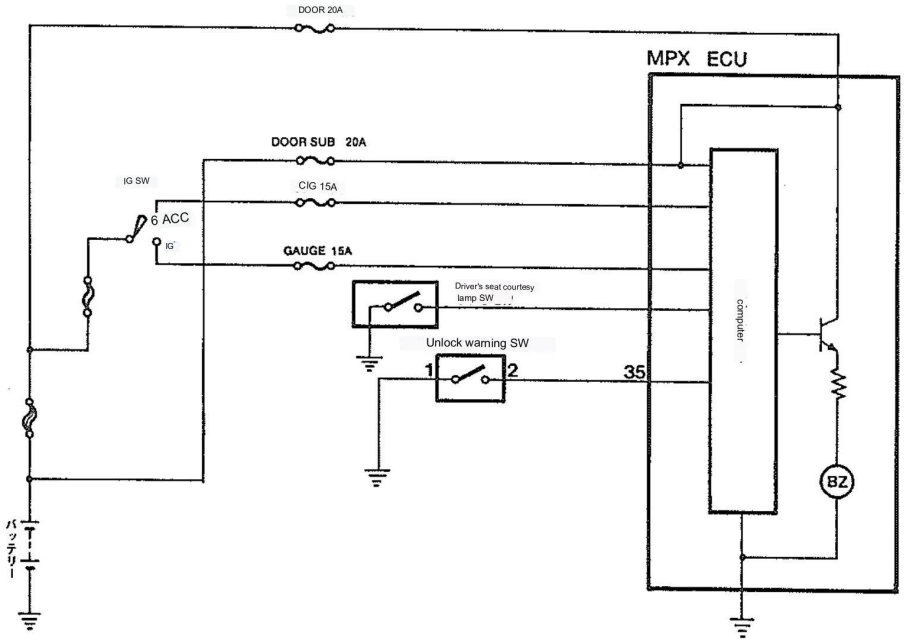
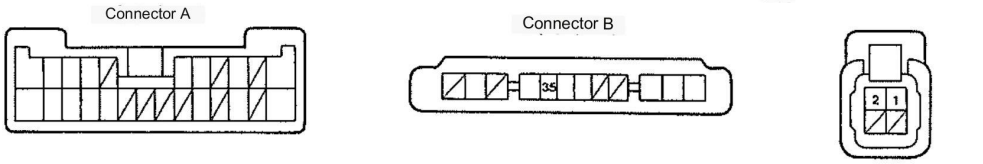
chart 4	Buzzer does not stop sounding even after removing the key plate (driver's door opened)



MPX ECU

Unlock warning SW



	work title	point 検 Guidelines/Basics quasi	Conclusion Fruit
1	Remove unlock warning SW		After work go to 2
2	Unlock warning SW individual inspection	· Refer to unit inspection (P15-176)	To YES-3 NO-unlock warning SW defective
3	Disconnect the MPX ECU connector		After work go to 4
4	MPX ECU ~Unlocked Warning Short circuit check between SW	· MPX ECU Vehicle side connector 35 terminal Between body 蒼 ground Semi-unlock warning SW disconnected state No continuity	YES-MPX ECU defective NO-W/H (between MPX ECU35 terminal and unlock warning SW2 terminal) Defective

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box Conveyance
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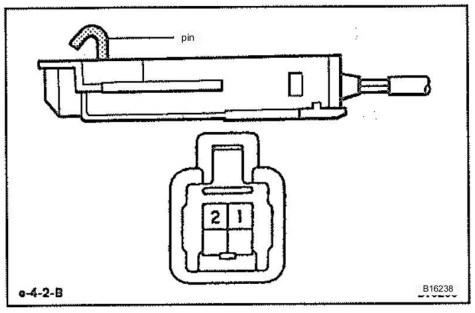


Individual inspection

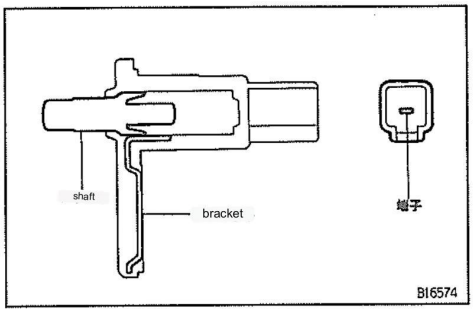
Unlock warning switch

1 Continuity check

(1) Check continuity between connector 1 and 2 terminals.

Standard When the bottle is not pushed in...No continuity

When the bottle is pushed in... Continuity exists



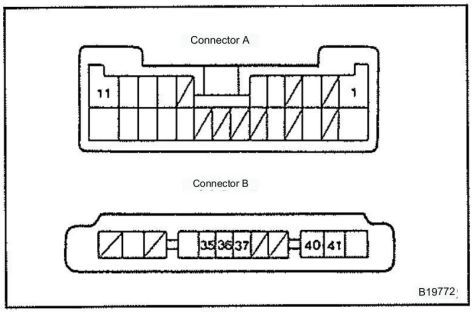
courtesy lamp switch

1 Continuity check

(1) Check continuity between connector terminal brackets. Standards

When the shaft is not pushed in... there is a guideway When

the shaft is pushed in... there is no semi-conductor



Multiplex network body computer (MPX body computer)

Note Since it is not possible to inspect the MPX body computer individually, please follow the troubleshooting flowchart to determine pass/fail.

conduct.

<reference> Shows the status of each terminal when the connector is connected.

standard

ID / Tester Tester ⊕ ⊖	item	point 検 条 subject	standard
1 Body ground (power supply voltage)	Voltage	"Always	10~14V
11 Body ground (power voltage)	電圧	常 時	10~14V
35 Body Earth (Unlock warning input)	Voltage	Insert the key plate into the ignition key cylinder → remove it	0V→9V or more
36 Body ground (driver's seat courtesy lamp input)	Voltage	Driver's door opening/closing	0V→10~14V
37 Body ground (power supply voltage)	Densho	Ignition switch OFF→ON	0V→10~14V
40 Body Earth (Earth)	導	Normal time	With guidance
41 Body Earth (Power-supply voltage)	電 Sho	Ignition switch OFF→ACC	0V→10~14V

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TD049583

illuminated entry

system

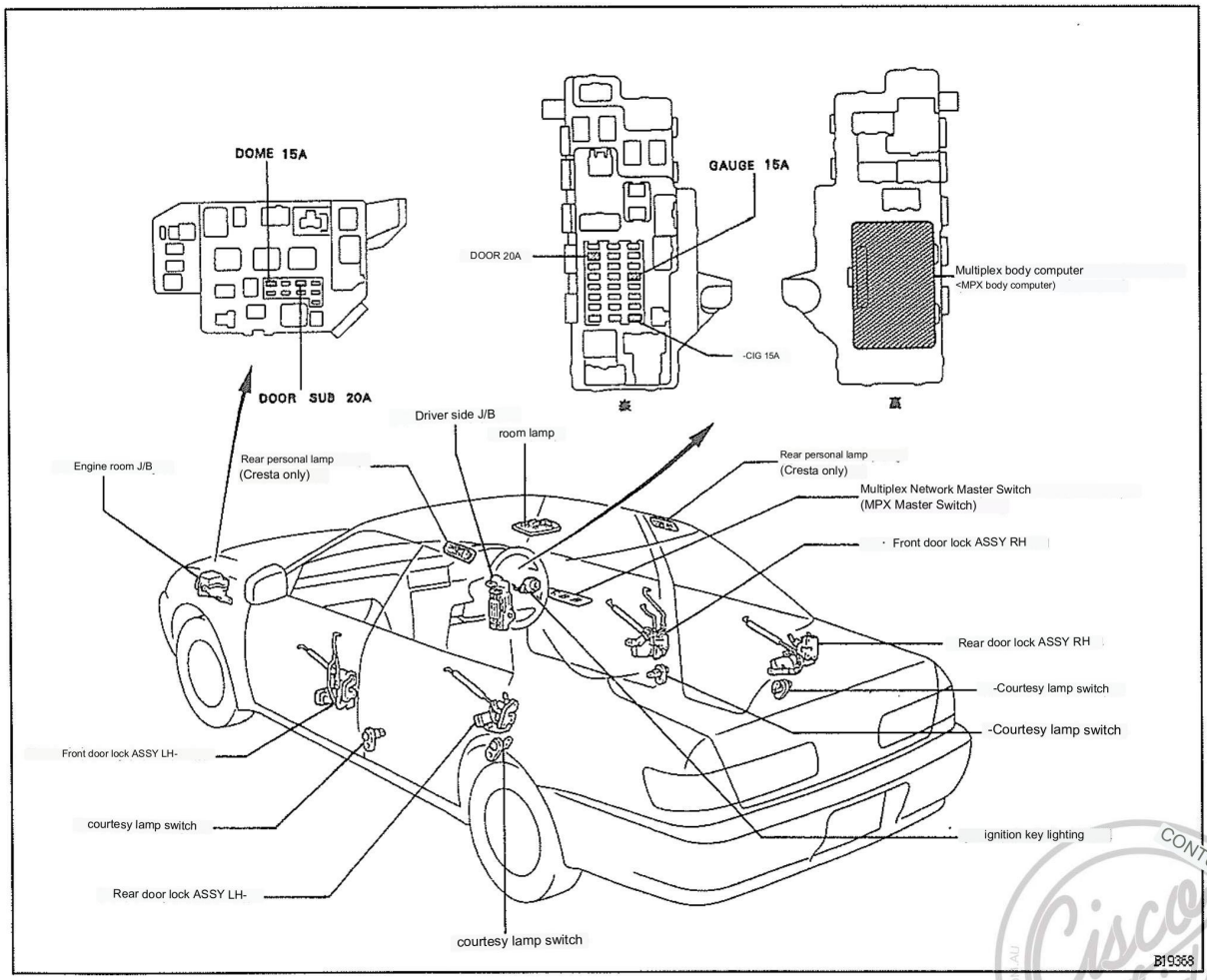
Preparation items

針 vessel

	09082-00030	toyota electrical tester	Each part is for use as a pointer.
	09083-00150	test lead set	Each part is for use as a pointer.

T0048004

Parts layout diagram



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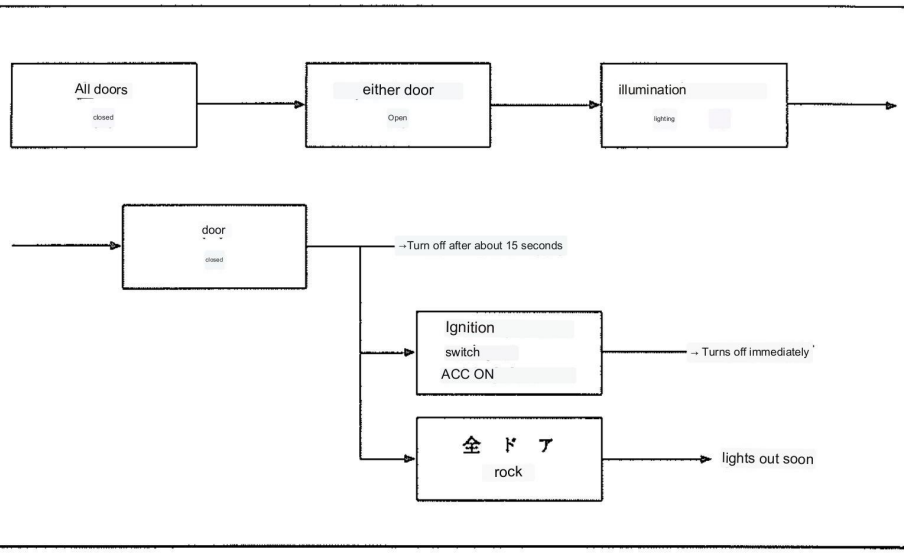
Functional check

Illuminated entry system function check

Functional details	point spear 内 capacity
Basic operation illumination (・イグニッションキー six lighting ・ドームランプ ・リヤパーソナルランプ (カーテ))	

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troubleshooting

How to proceed with troubleshooting

(1) Check according to the applicable chart from the malfunction phenomenon list. If multiple defects occur, the chart number is smaller. First, troubleshoot.

How to read the flowchart

(1) Perform inspection starting from number 1 given to the work title.

(2) If there is a number in the result, proceed to the corresponding number.

(3) If the results indicate ~defect, take corrective action and check the phenomenon again. After approval, end.

<Reference> Terms in each flowchart are abbreviated

- MPX body computer...MPX ECU
- as follows. MPX master switch...Master SW · MPX switch (each regulator switch)...
- MPX SW Ignition switch...IG SW
- Wire harness...W/H
- ~Switch...~SW

List of malfunction phenomena

No	If	Applicable
Illumination does not turn on even if all doors are opened		1
The illumination may not turn on even if you open one of the doors.		2
Illuminations do not turn off forever (illuminations turn on when any door is opened)		3
All doors closed Illumination does not turn off immediately with all doors locked		4
All doors, illumination does not turn off immediately with IG SW ACC		5

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circuit diagram

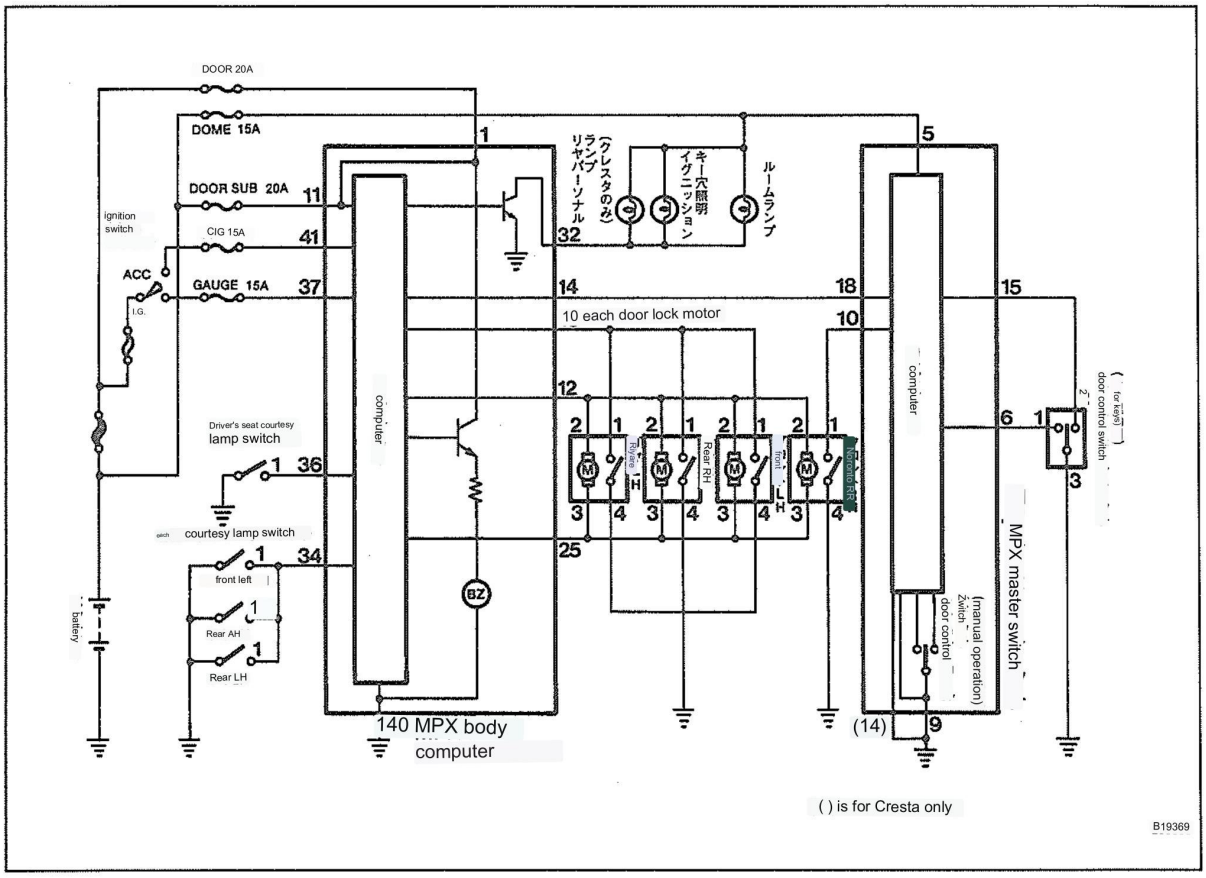

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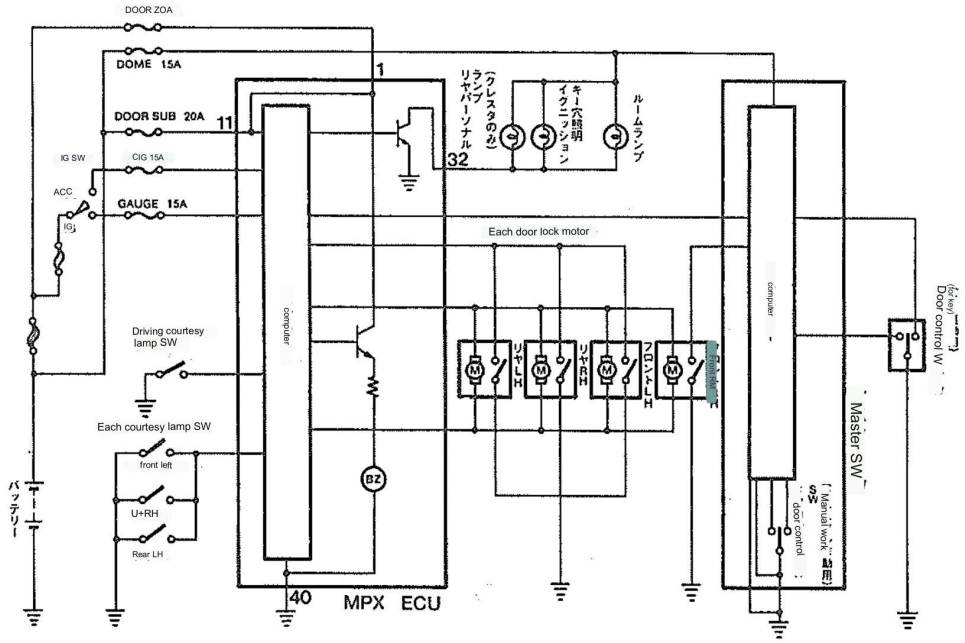
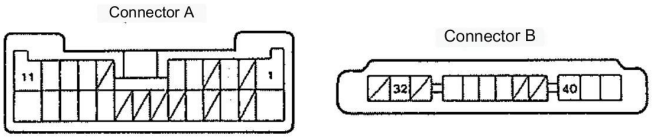
Chart 1	Illumination does not turn on even if all doors are opened



MPX ECU



	work title	Tengoku 要 territory/base 準	Conclusion Fruit
1	fuse inspection	・ Is the DOME fuse (15A) normal?	YES - Go to 2 NO - blown fuse
2	Check each valve	・ Are the illumination valves normal?	YES - Go to 3 NO - Valve out
3	Disconnect the MPX ECU connector		After work go to 4
4	MPX ECU power system inspection	・ MPX ECU Vehicle side connector 1 and 11 terminals Between body ground Standard 10~14V	Go to YES-5 NO-W/H (between fuse and MPX ECU) Defective
5	MPX ECU ground system inspection	• MPX ECU Vehicle side connector 40 terminals Between body ground Standard available	To YES-6 NO-W/H (between MPX ECU40 terminal and body ground) Defective
6	Illumination W/H inspection	• MPX ECU Short-circuit vehicle side connector terminal 32 to body ground Standard (room lamp is set to DOOR) Illumination turns on	YES- MPX ECU defective NO-W/H (between DOME fuse and MPX ECU) defective

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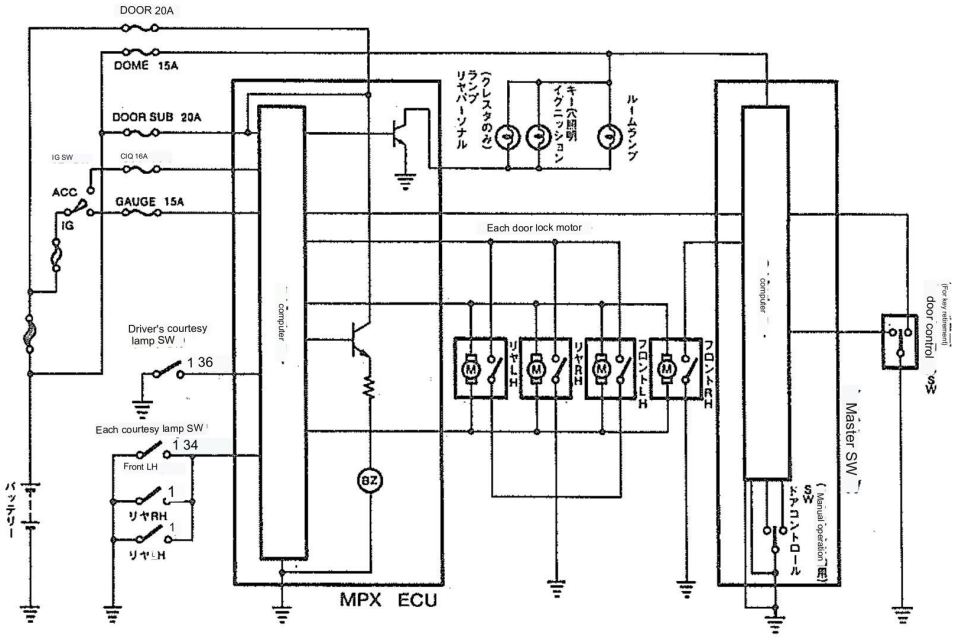
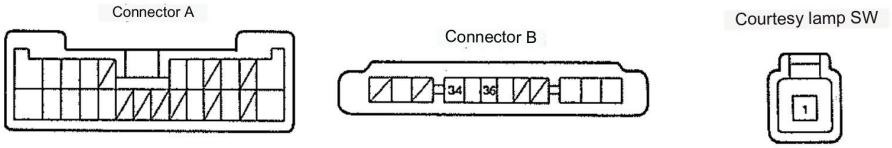
Chart 2	The illumination may not turn on even if one of the doors is opened.



MPX ECU



(If only the driver's seat does not light up → 1 Go to · If only the driver's seat lights up → Go to 2)

	work title	Inspection standards	Fruit
1	Inspection of driver's door courtesy lamp SW	• See unit inspection (P15-186)	Go to YES-2 NO Courtesy lamp SW defective
2	Door courtesy lamp other than driver's seat SW individual inspection	· Refer to unit inspection (P15-186)	Go to YES-3 NO-Courtesy lamp SW defective
3	MPX ECU connector	(If only the driver's seat does not light up → go to 4 If • only the driver's seat lights up → go to 5)	
4	Driver's door courtesy lamp SW system W/H inspection	· MPX ECU Vehicle side connector 36 terminals Between POD and earth Standard driver's door closed...No continuity Driver's door...Continuity exists	YES-MPX ECU defective NO-W/H (MPX ECU36 terminal~ Driver's seat courtesy shield between the pump SW) is defective
5	Door courtesy lamp other than driver's seat SW system W/H inspection	· MPX ECU vehicle side connector 34 terminal between body ground Doors 基準 other than driver's seat closed...No conductor Doors other than driver's seat...With conductor	YES-MPX ECU defective NO-W/H (MPX ECU34 (between terminal and each door courtesy lamp SW)

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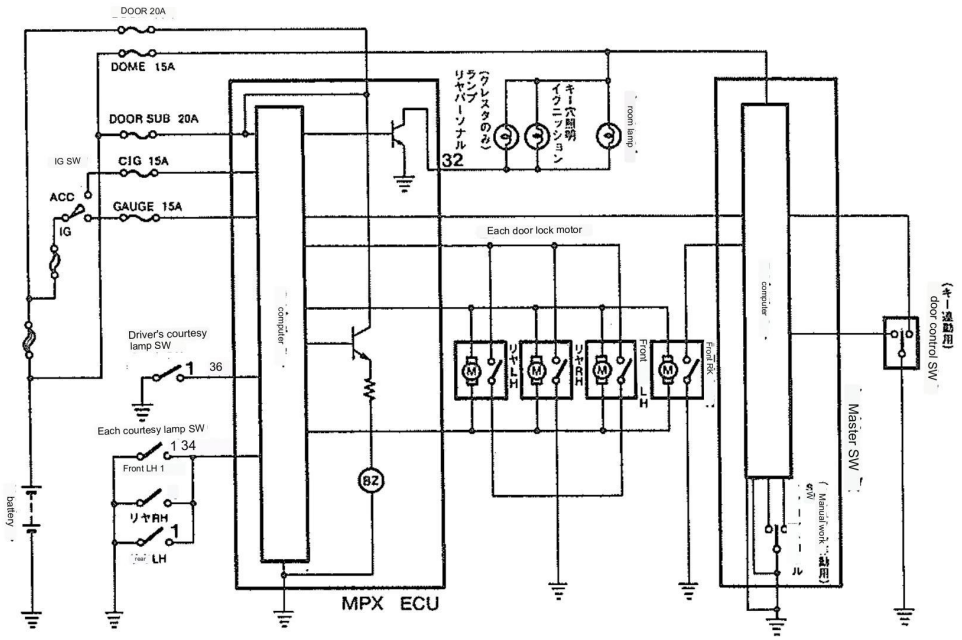
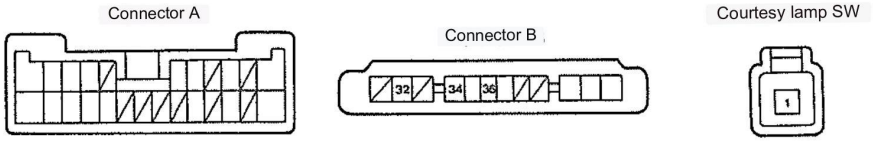
Chart 3	Illuminations do not turn off forever (illuminations turn on when any door is opened)



MPX ECU



	work title	point 頎・基準	Fruit
1	Individual courtesy lamp SW inspection	・See unit inspection (P15-186) 照	Go to YES-2 NO-Courtesy lamp SW defective
2 | Disconnect the MPX ECU connector			After work go to 3
3	MPX ECU courtesy lamp SW system W/H inspection	• MPX ECU vehicle side connector 36 terminal between body ground 基準 Driver's door closed...no continuity Driver's door open...conductor exists ・MPX ECU vehicle side connector 34 terminals Body ground question All doors other than the reference driver's seat are closed••••••No continuity Doors other than the driver's seat have continuity	Go to YES4 NO-W/H (MPX ECU~ Courtesy lamp SW Question) Defective
4	illumination power supply inspection	• MPX ECU Vehicle side connector 32 terminals Between body ground Standard 10~14V	YES-MPX ECU defective NO-W/H (between valve and MPX ECU) defective

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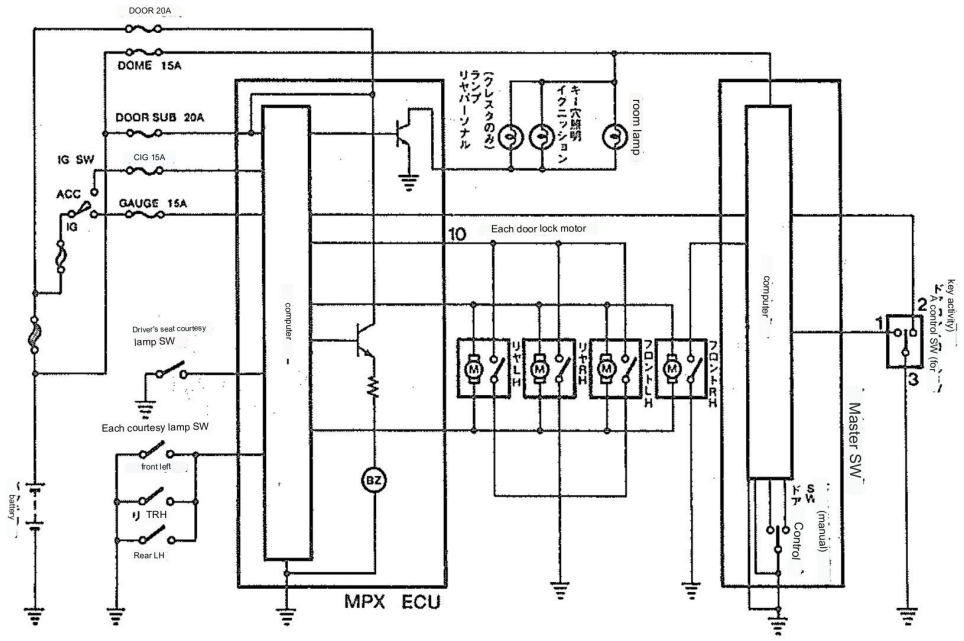
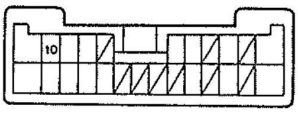
Chart 4 Illumination does not turn off immediately with all doors closed and all doors locked

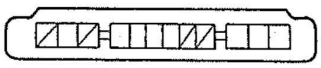


MPX ECU

Connector A



Connector B



Door control SW
(for key interlocking)

	work title	点検 Essential Simple・Basic 準	Conclusion Fruit
1	Illumination operation check	• Does the illumination turn off approximately 15 seconds after the door is opened and all doors are closed?	Go to YES-2 NO Go to chart 3
2	Master SW function check	•Is the power window operating normally?	Go to YES-3 NO-Power window tiger Go to To Bull Shoot
3	Door lock (key-linked door control SW) operation check	• Is the door lock (key-linked door control SW) operating normally?	To YES-4 NO-Electric door lock troubleshooting
4	Disconnect the MPX ECU connector		5 after work
5	Doors other than driver's seat lock position SW inspection	・MPX ECU vehicle side connector 10 terminal and body ground 基準 Passenger seat and rear seat are all locked...No continuity Either passenger seat or rear seat is unlocked...Continuity is present	YES-MPX ECU defective NO- Passenger seat or rear seat door Lock ASSY (position ン SW) defective • W/H (MPX ECU~ door lock ASSY) defective

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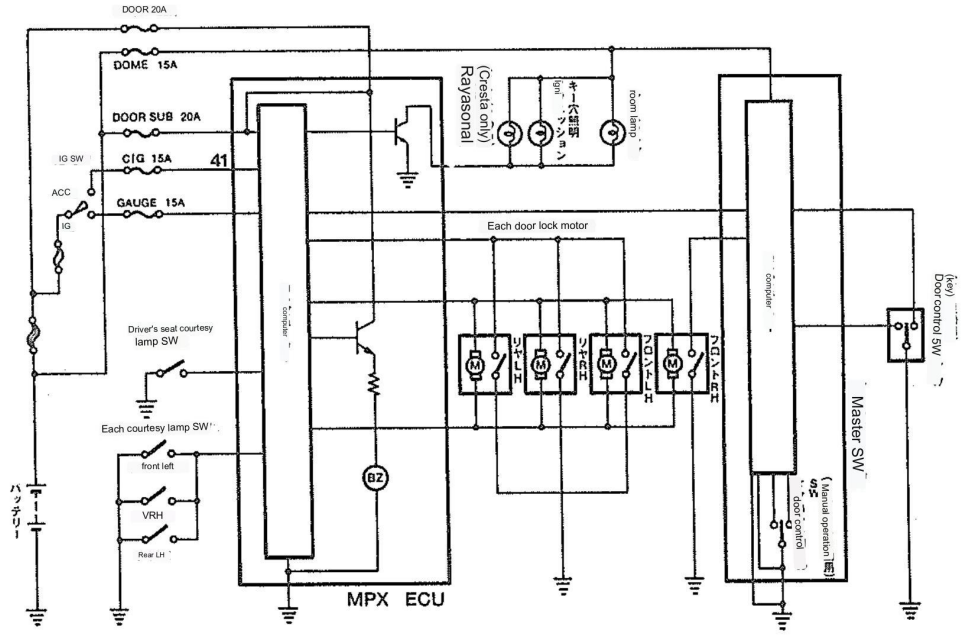
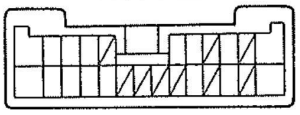
Chart 5 All	doors closed, illumination does not turn off immediately with IG SW ACC

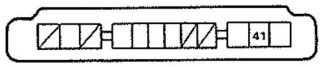


MPX ECU

Connector A



Connector B



	work title	by point • 基 準	Fruit
1	Illumination operation point tree	When the door is opened → all doors, the illumination will turn off after about 15 seconds.	Go to YES-2 NO - Go to chart 4
2	Disconnect the MPX ECU connector		After work go to 3
3	ACC signal input check	•MPX ECU Vehicle side connector 41 terminal Between body ground Reference IG SW ACC time •••••• 10~14V	YES-MPX ECU defective NO-IG SW defective • W/H (IG SW-MPX ECU) defective

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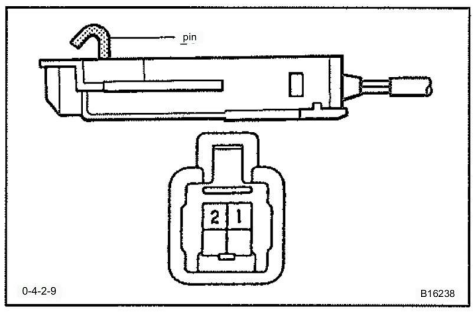


Individual inspection

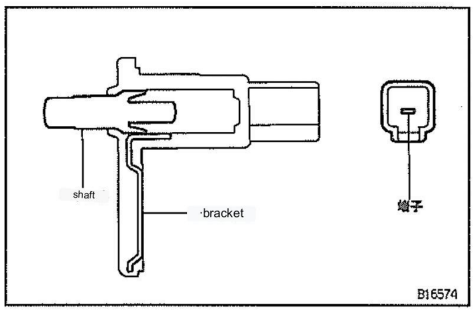
Unlock warning switch

1 Continuity check

(1) Check continuity between connector terminal 1 → terminal 2.

Reference No continuity when pin is not pushed in

When the pin is pushed in... there is continuity



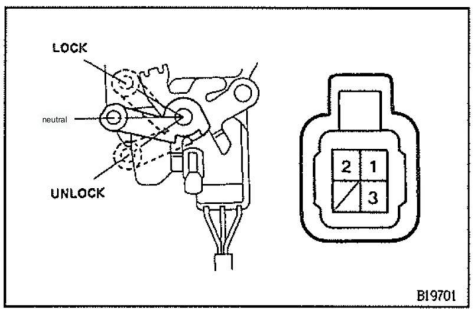
courtesy lamp switch

1 Continuity check

(1) Check continuity between connector terminal brackets. Standard

When the shaft is not pushed in...Continuity exists

When the shaft is pushed in...There is no continuity



Door control switch (for key interlocking)

1 Continuity check

(1) Check continuity between each terminal at each position of the switch lever.

Quasi ○○ guidance available

Terminal / number Switch	2	3	1
LOCK	○	○	
neutral position			
UNLOCK		○	○

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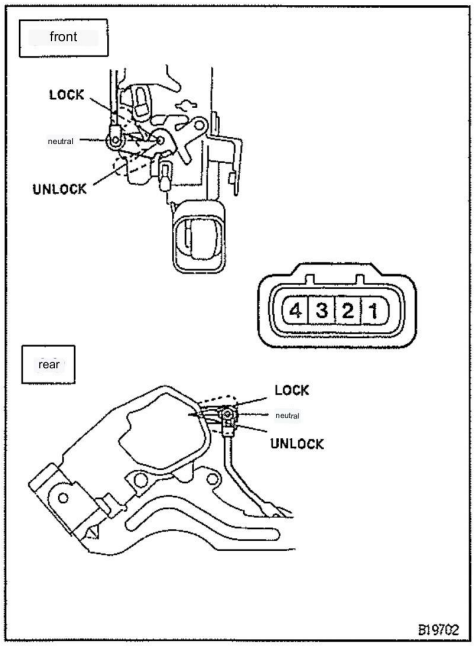

door lock motor

1 Door lock operation & continuity check

(1) Check the operation of the door lock when battery voltage is applied to the motor terminal inside the door lock, and check the continuity between the motor terminals.

connection	Made by The
battery +3 terminal	door lock is LOCK
battery 2 terminals	14 No continuity between terminals
battery +2 terminal	Door lock is UNLOCK
battery 3 terminal	Continuity between 14 terminals

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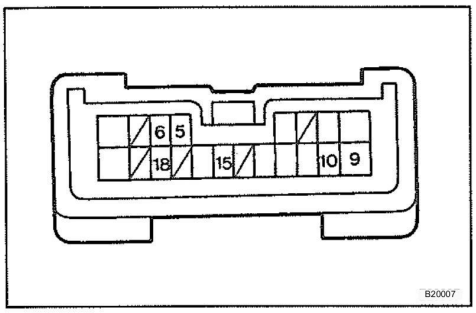

multiplex network master switch (MPX master switch)

1 Operation check

(1) Check continuity and pressure between each terminal and body ground using the following inspection procedure.

Ru.

- In the table, "disconnected vehicle side" indicates that the connector is disconnected and inspected using the vehicle side connector, and "connector connected" indicates that the inspection is performed with the connector connected.
- After checking the "disconnected vehicle side", check the "connector connection".

基 準

Measurement connector conditions	ID tester ⊕ ↔ ⊖	tester item	point 検 条 subject	基 準	Problem location in case of non-standard
Connection disconnected vehicle side	5 Body Earth (Power-supply voltage)	Voltage	"Always	10~14V	Vehicle side
	6 Body ground/ key interlocking door (control input)	Jintong	Place the driver's door key cylinder in the neutral position with the key plate → UNLOCK	No continuity Yes	
	9 Body Earth (Earth)	導	Normal time	導通 can be	
	10 Body Earth (Driver's door lock input)		Continuity Driver door lock knob LOCK UNLOCK	No continuity Yes	
	15 Body ground/ key interlock \door control input)	Continuity	Place the driver's door key cylinder in the neutral position using the key plate. → LOCK	No semi-accredited Yes	
	18 Body ground (multiple communication bus output)	Mizodori	"The time	No continuity (1kΩ or more)	
connector connection	18 body ground (multiple communication bus output)	*1 *3 Voltage	Master switch door control after leaving for more than 1 minute* Switch OFF LOCK	1V or less 0→ V5V or more repeat	master switch
			Leave it for more than 1 minute *2 After that, turn the master switch door control switch OFF → UNLOCK	1V or less → OV5V or more and repeat.	
			Leave it for more than 1 minute* Hold the rear driver's door key cylinder in the neutral position → LOCK with the plate	1V or less → 0V5V or more and repeat.	
			Leave for more than 1 minute*2 Keep rear driver's door key cylinder more Neutral position → UNLOCK	1V or less → 0V5V or repeat at rate	
			Driver's door lock knob LOCK→ after being left unattended for more than 1 minute UNLOCK	1V or less → 0V → 5V or more repeat	
			Leave it for more than 1 minute *2 Rear driver door lock knob UNLOCK→ LOCK	1V or less 0→ V5V or more repeat	

1: Since only the presence or absence of communication output in response to switch operation can be determined, it cannot be determined that the MPX master switch is normal even if it meets the criteria. * 2: Communication will stop if any communication-related switches (switches in the MPX master switch, door control switch for key interlocking, position switch in the driver's door lock control motor, etc.) are left unoperated for one minute. *3: Check the voltage output using the bar graph display.

15

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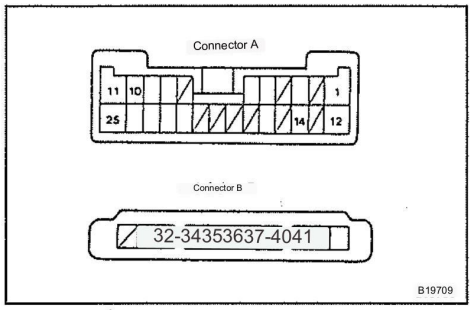

multiplex network body computer (MPX body computer)

注意 MPX body computer cannot be inspected individually, so please follow the troubleshooting flowchart to determine pass/fail.

conduct.

〈参考〉 Indicates the status of each terminal when the connector is connected.

基 準

ID tester ⊕ ↔ tester ⊖	item	point 検 Inspection subject	standard
1 body earth (Power supply	Voltage	Always	10~14V
voltage) 10 Body ground (Passenger seat, rear seat door lock output)	導 General	Passenger and rear door lock knobs LOCK → Either door lock knob UNLOCK	No leading → Yes
11 Body ground (power voltage)	Voltage	Always	10~14V
12 body ground (door lock motor output)	Voltage *2	Door control switch (for manual operation) OFF LOCK	OV→10~14V→ O.V.
14 Body ground (multiple communication bus input)	Voltage *	After leaving it for more than 1 minute, the master switch door control switch turns OFF LOCK. or UNLOCK	0 V→ 1V or less → Repeat 5V or more
25 Body Earth (Door lock motor output)	Voltage*2	Door control switch (for manual operation) OFF UNLOCK	OV 10~14V → O.V.
32 Body ground (lighting power input)	Voltage	Always	10~14V
34 Body ground (passenger seat rear seat courtesy lamp input)	Voltage	Gold door closed Passenger seat or rear seat door open	10~14V→OV
36 Body ground (driver's courtesy lamp input)	Voltage	Driver's door opening/closing	0 V→10~14V
37 Body ground (power supply voltage)	Voltage	Ignition switch OFF→ON	0 V→10~14V
40 Body Earth (Earth)	導 Normal time		With continuity
41 Body earth (Denoka voltage)	Densho	Ignition switch OFF ACC	0 V→10~14V

15

*1: Communication will stop if any communication-related switches (switches in the MPX master switch, key interlocking door control switch, position switch in the driver's door lock control motor, etc.) are left unoperated for one minute.

*2: Check the voltage output using the bar graph display.

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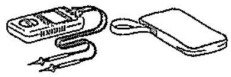
T0040070

Warning for forgetting to turn off the lamp system

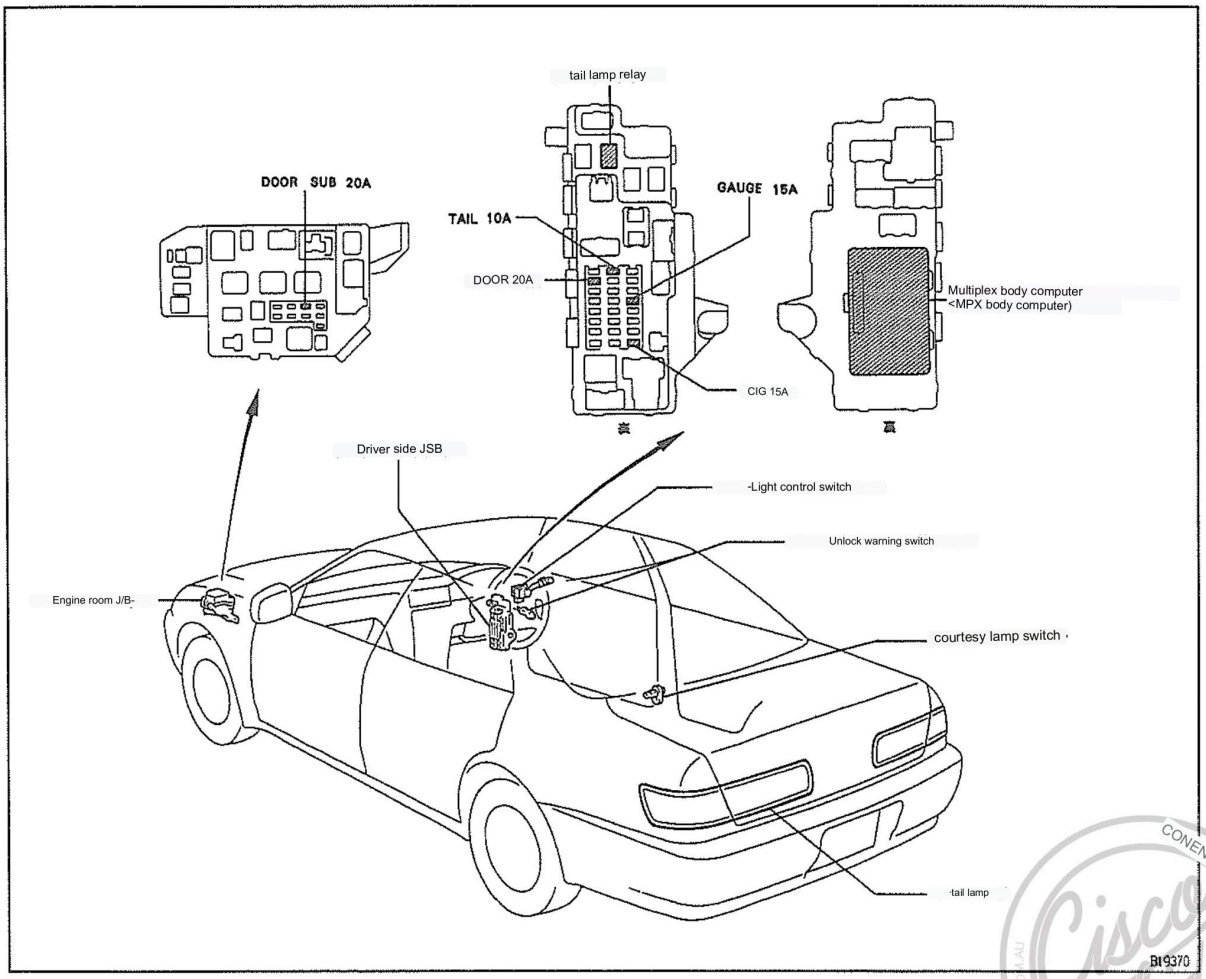
Preparation items

instrument

	09082-00030	toyota electrical tester	For inspection of each part
	09083-00150	Test lead set	For inspection of each part

T0048071

Parts layout diagram



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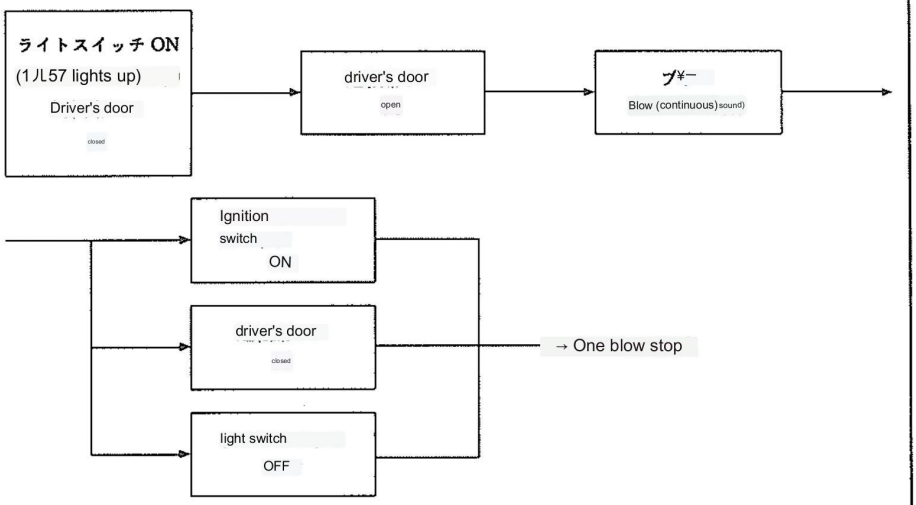
Functional check

Warning system function check for forgetting to turn off the lamp

Functional details	point 検 内 capacity
Basic work動 (1) Yuichika 6gyuichi Pull out the plate and inspect it. する）	

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¥0040003

troubleshooting

How to proceed with troubleshooting

(1) Check according to the applicable chart from the malfunction phenomenon list.

How to read the flowchart

(1) Inspection starts from number 1 given to the work title.

(2) If there is a number in the result, proceed to the corresponding number.

(3) If the results indicate ~defect, take corrective action and check the phenomenon again.

After approval, it will end.

《参考》 The terms in each flowchart are abbreviated as follows.

- MPX body computer... MPX ECU
- MPX master switch...master SW
- MPX switch (each regulator switch)...MPX SW
- ignition switch...IG SW
- Wire harness...W/H
- ~switch...~SW

List of malfunction phenomena

No Ingredients If 内 capacity	Defect chart
I forgot to turn off the lamp and the warning buzzer does not sound.	1

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circuit diagram

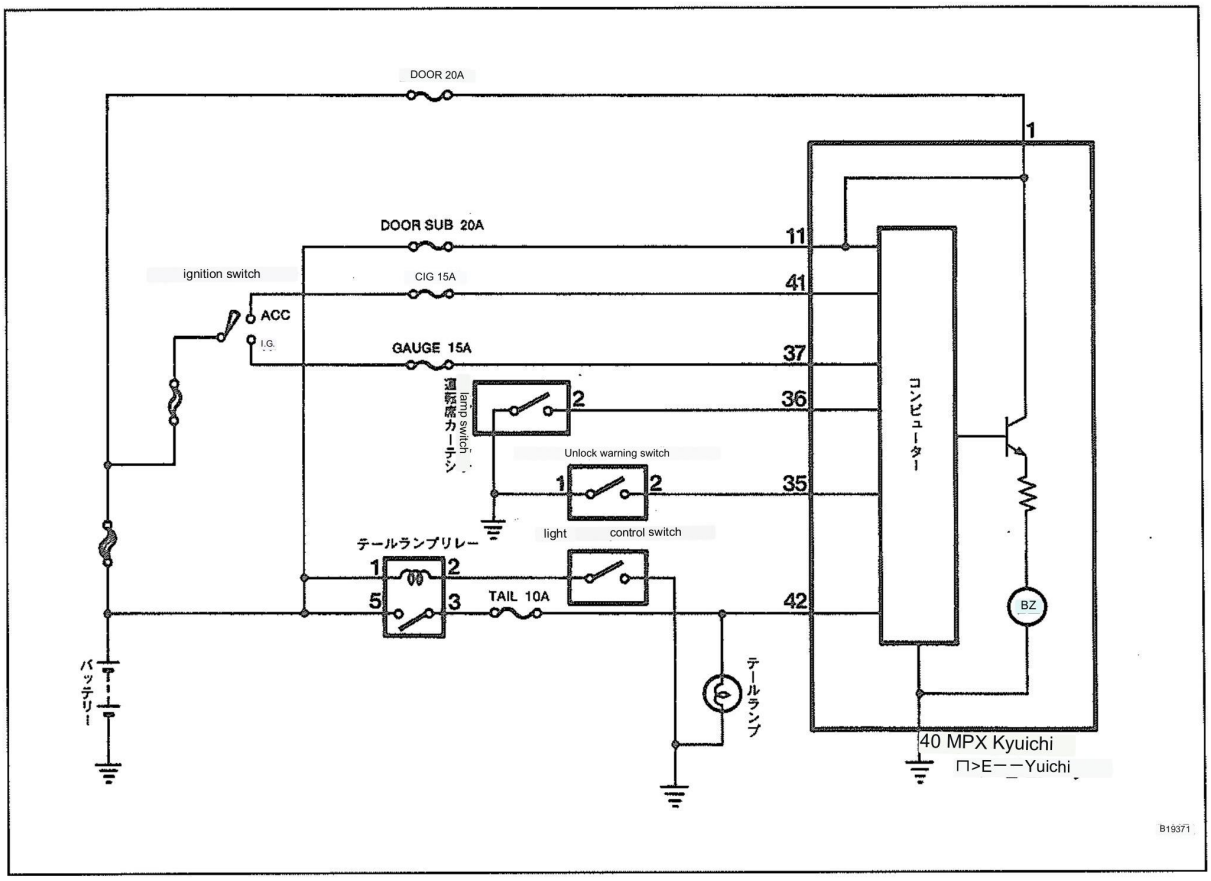

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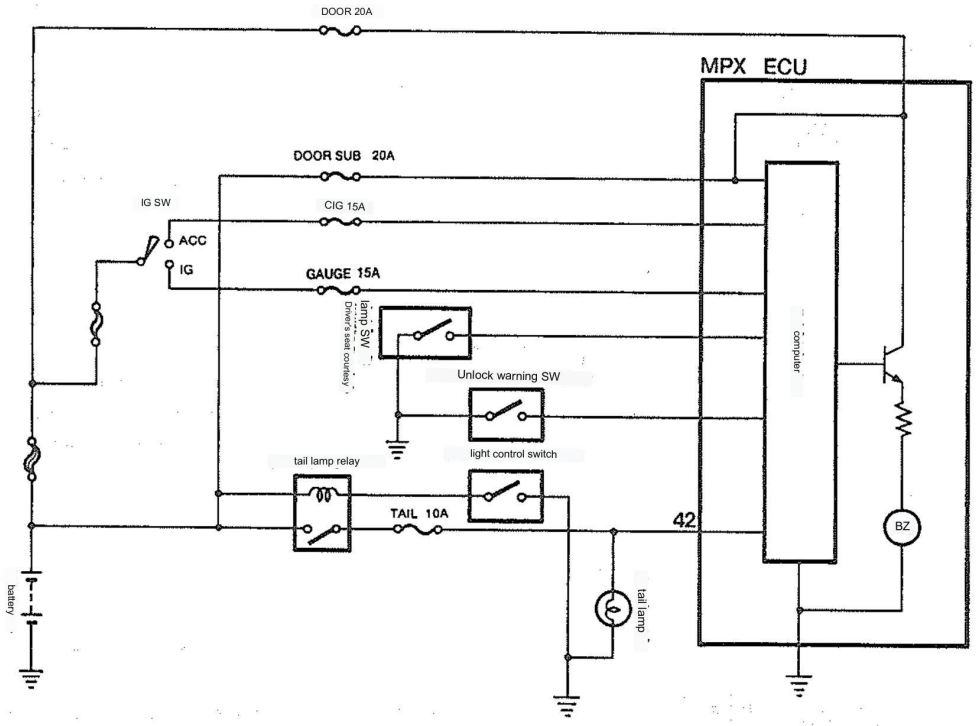
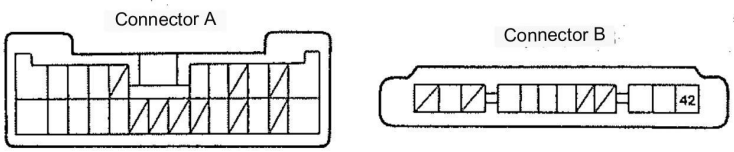
chart 1	I forgot to turn off the lamp and the warning buzzer does not sound.



MPX ECU



	work title	point 檢 要 territory/base 準	Fruit
1	Warning system operation check for forgetting to remove the key	Is the warning system for forgetting to remove the key normal?	Go to YES-2 NO-Key forgot to remove Warning Go to system troubleshooting
2	Disconnect the MPX ECU connector		After work go to 3
3	MPX ECU ~Tail run · MPX Inspection of W/H between prelays	ECU Vehicle side connector 42 terminals Between body and earth Reference light control switch TAIL 10~14V	YES-MPX ECU defective NO-W/H (between relay and MPX ECU) defective

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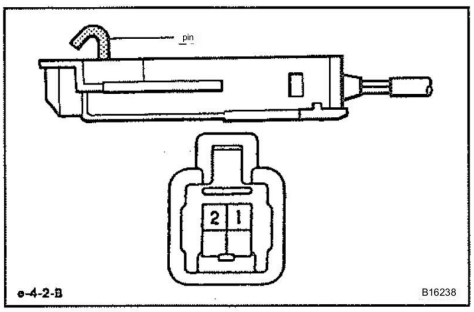


Individual inspection

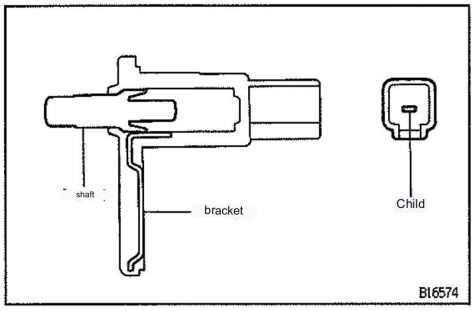
Unlock warning switch

1 Continuity check

(1) Check continuity between connector 1 and 2 terminals.

standard When the pin is not pushed in ••••••No continuity

When the pin is pushed in •••••• Continuity exists

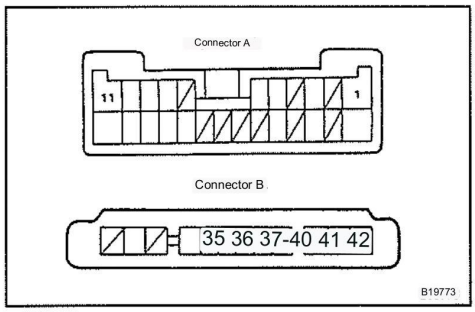


courtesy lamp switch

1 Wantong Inspection

(1) Check continuity between connector terminal brackets. Standard

When the shaft is not pushed in...Conductivity exists When the shaft is pushed in There is no continuity



Multiplex network body computer (MPX body computer)

Caution Since it is not possible to inspect the MPX body computer individually, Follow the troubleshooting flowchart to determine pass/fail.

conduct.

〈参考〉 Indicates the status of each terminal when the connector is connected.

基 quasi

ID Tester + ⊕ Tester ⊖	Item	点 検 article subject	standard
1 Body ground (power supply voltage)	Voltage	Always	10~14V
11 Body Earth (Power-supply voltage)	Voltage always		10~14V
35 Body earth (unlock warning input)	Yosho	Insert the key plate into the ignition key cylinder → remove it	OV-9VELE
36 Body ground (driver's courtesy lamp input)	Voltage	Driver's door open → closed	0V→10~14V
37 Body Earth (Power-supply voltage)	Kansho	Ignition switch OFF→ON	0V→10~14V
40 Body Earth (Earth)	Mizodori	"Always"	With continuity
41 Body ground (power supply voltage)	Densho	Ignition switch OFF ACC	0V→10~14V
42 Body ground (tail lamp input)	Densho	Light control switch OFF→TAIL	OV→10~14 V

15

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16 Electrical

"Precautions for vehicles equipped with SRS airbags"

This section contains maintenance tasks that affect the SRS airbag. For applicable maintenance work, please refer to the table of contents and the title in the main text.

There is a ★ mark in front of it, so please read the precautions for SRS airbags in this manual before starting work.

ignition switch ..... 16 — 5

Prepared items 16-5

Individual inspection ..... 16 — 5

ignition switch ..... 16 — 5

Writing ..... 16 — 6

notes 16-6

discharge headlamp ..... 16 — 6

Prepared items ..... 16 — 7

Parts layout diagram 16-8

Functional inspection 16-11

discharge headlamp ..... 16 - 11

Conlite (excluding Tourer V, Tourer S,

Tourer, Lulane G, Lulane)... 16 11

troubleshooting

(discharge headlamp) 16-12

How to proceed with troubleshooting 16-12

Inspection using charts for each defect ..... 16 — 12

phenomenon Fail-safe function

(Light control computer)... 16-12

Precautions when replacing valves 16-13

Precautions when replacing bulbs for each lamp 16-13

head lamp 16-14

High beam 16-14

Optical axis adjustment 16-14

Light intensity check 16-15

low beam 16-15

Optical axis adjustment confirmation 16-15

fog lamp (chaser) 16-16

Optical axis adjustment (vertical direction) ..... 16 - 16

Headlamp ASSY

& Side Turn Signal Lamp ASSY... 1616

Mark II ..... 16 — 16

Delivery configuration diagram 16-16

Exploded diagram (discharge headlamp) 16-17

Bulb replacement (discharge headlamp) ..... 16 — 18

Points to note when installing valves 16-18

Headlamp ASSY & side turn

Signal lamp ASSY removal... 16-19

Excluding discharge headlamps 16-19

discharge headlamp 16-19

Headlamp ASSY

(Discharge headlamp) Disassembly... 16-20

Points to note during installation work 16-20

Cresta installation and 16-21

removal configuration diagram 16-21

Exploded diagram (discharge headlamp) ..... 16 — 22

Bulb replacement (discharge headlamp) 16-23

Points to note when installing valves 16-23

Headlamp ASSY & side turn

Signal lamp ASSY removal... 16 24

Excluding discharge headlamps 16-24

discharge headlamp 16-24

Headlamp ASSY

(Discharge headlamp) Disassembly... 16-25

Points to note during installation 16-25

work Headlamp ASSY

& Front turn signal lamp ASSY... 16 - 26

chaser ..... 16 — 26

Detachment configuration diagram 16-26

Exploded diagram (discharge headlamp) 1627

Bulb replacement (discharge headlamp) ..... 16 — 28

Points to note when installing valves 16-28

HEADLAMP ASSY & FRONT TURN

Signal lamp ASSY removal... 16 29

[Excluding discharge headlamps 16- 29

[Discharge headlamps 16- 29

Headlamp ASSY

(Discharge headlamp) Disassembly... 16-30

Notes on installation work 16-30

Front turn signal lamp ASSY

(Mark II Cresta) ..... 16 — 31

valve replacement 16-31

Front turn signal lamp ASSY removal 16-31

Fog lamp ASSY (chaser) 16- 32 Installation/ ..... removal

configuration diagram 16- 32

valve replacement 16-33

Fog lamp ASSY removal 16-33

Points to note during installation work 16-33

Rear combination lamp ASSY 16- 34 Installation and ..... removal

configuration diagram 16-34

16

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Rear combination lamp ASSY removal ... 16-35
Rear lamp ASSY (Mark II) ... 16 36
De-scaling ... configuration
diagram 16-36 Rear lamp ASSY removal ... 16-36
License plate lamp ASSY ... 16-37
| Mark II Cresta ... 16 - 37
Removal configuration ... diagram 16
- 37 Valve replacement ... 16- 37
License plate lamp ASSY removal ... 16-38
Chaser ... 16-39
Detachment configuration diagram ... 16-39
Valve ... replacement
16-39 License plate lamp ASSY removal ... 16-40
Center stop lamp assembly ... 16-40
Bulb replacement ... 16-40
Center stop lamp ASSY removal ... 16-40
Headlamp dimmer switch ASSY ... 16-41
Detachment configuration diagram ... 16-41
Individual inspection ... 16 — 42
Headlamp relay ... 16-42
tail lamp relay, fog lamp relay ... 16-42
Light control switch ... 16-42
Fog lamp switch ... 16-43
headlamp dimmer switch ... 16-43
Turn signal switch ... 16 - 43
Hazard warning signal switch 16 ... - 43
Turn signal flasher 16-44 ... Headlamp
leveling switch ... 16-44
Neutral start switch (A/T vehicles) ... 16-44
Stop lamp switch ... 16-44
Backup lamp switch (M/T vehicle) ... 16-44
Glove box lamp switch ... 16-44
Courtesy lamp switch ... 16-45
rear fog light switch ... 16-45
Conlight Scanner ... 16-
46 Wiper & Washer — ... 16 - 47
Preparation ... diagram 16 -
parts parts layout ... 47 16-48
front wiper ... 16-50
Wiper motor & link ... 16-50
Deconfiguration diagram ... 16-50
Points to note when replacing wiper ... rubber
1651 Wiper motor & link removal ... 16-51
Wiper motor ; & link
Points to note during installation work... 1652
How to switch the wiper stop position
(Military with semicon/fulcon switching mechanism) ... 16-52
windshield wiper switch ... 16-53
Configuration diagram ... 16-53
Individual inspection... ... 16-53
windshield wiper switch ... 16-53
Windshield wiper motor ASSY ... 16-54
rear wiper ... 16 — 55
rear wiper motor ... 16-55
Exploded configuration diagram ... 16-55
Points to note when replacing wiper rubber ... 16-56
Rear wiper motor &
Rear wiper control relay removal... 16-56
Rear wiper motor & rear wiper
Points to note when installing the control relay... 16-57
Individual inspection ... 16-58
windshield wiper switch
(Rear wiper switch) ... 16-58
Rear wiper control relay ... 16 58
rear wiper motor ... 16-59
washer ... 16 — 59
washer nozzle ... 16 - 59
Single point ... 16-60
windshield wiper switch
(Washer switch) ... 16-60
washer motor ... 16-61
Meter & Gauge ... 16-62
Preparation ... diagram
parts parts layout ... 16-62 16-63
Optitron meter ... 1665
Internal circuit diagram ... 1665
Combination meter ASSY ... 1667
Decomposition ... 16-67
diagram Decomposition ... diagram 1668
troubleshooting ... 16-69
Pre-inspection ... 16-69
Inspection using charts by trouble phenomenon ... 16-69
Troubleshooting by problem phenomenon ... 1670
Speedometer ... 16 — 75
Speedometer check ... 16-75
Speed sensor (in combination meter) ... 1676
Speedometer sensor inspection (M/T vehicles) ... 16 — 76
Tachometer ... 16-77
Tachometer inspection ... 16-77
Water Temperature Gauge ... 16-77
Water Temperature Receiver Gauge Inspection...1677
Water Temperature Cender Gauge ... 16-78
Fuel Gauge ... 16-78
Fuel receiver gauge inspection ... 1678
Fuel sender gauge ... 16 78
Fuel receiver gauge warning...16-79
Fuel receiver gauge warning inspection 16 79
Fuel filter warning ... 16 — 79
Fuel filter warning check ... 16-79
T-BELT warning (diesel vehicle) ***** 1679
T-BELT warning adjustment ... **** 16-79
Seat belt warning... ... 16 — 80

16

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Seat belt warning check 16-80
Buckle switch inspection 16-81
Oil pressure warning 16 81
oil pressure switch 16-81
brake warning 16-81
Brake warning check 16-81
Parking brake switch ..... 16 — 82
Parking brake switch inspection ..... 16 — 82
Level warning switch 1682
door warning 16-82
Courtesy lamp switch 16-82
Shift position indicator 16-82
Shift position indicator inspection 16-82
Neutral start switch inspection 16-83
Reverse warning 16-83
Reverse warning check ..... 16 — 83
O/D OFF indicator 16-83
O/D OFF indicator check/ 16-83
Transmission control switch inspection... 16-83
ECT indicator (PWR) 16-84
pattern select switch 16-84
Light disconnection 16-84
warning lamp fail rear indicator sensor 16-84
Cold cathode tube W/computer ASSY
(Meter lighting) 16-85
cold cathode tube 16-85
digital meter 16-86
internal circuit ..... 16 — 86
Exploded configuration diagram ..... 16 — 88
combination meter
Computer ASSY... 16-89
Combination meter computer ASSY. 16 - 89
Troubleshooting by defect phenomenon 16-92
Combination meter ASSY 16-95
troubleshooting ..... 16 — 95
speedometer 16-96
Troubleshooting 1696
Speedometer unit inspection/ 16-97
Speedometer inspection 16-97
Speed sensor check
(in combination meter) 16- 97
tachometer 16-97
troubleshooting 16-97
Tachometer unit inspection 16-98
Tachometer check 16-98
Water Temperature Gauge 16-99
Troubleshooting 16-99
Water temperature gauge individual inspection/ 16-99
Water Temperature Receiver Gauge Inspection... 1699
Water Temperature Cender Gauge 16-100
fuel gauge 16-100
Troubleshooting 16-100
Single fuel gauge inspection/ 16-101
Fuel receiver gauge inspection 16-101
Meter switch L inspection (FUEL enlargement) 16-101
fuel sender gauge 16-102
Fuel receiver gauge warning 16102
Fuel receiver gauge warning inspection...16102
Light Control Rheostat 16-103
Troubleshooting 16-103
Light control rheostat unit inspection... 16-103
Meter switch R inspection
(Light control rheostat) 16-103
Cruise Information Display 16-104
Troubleshooting 16-104
Cruise information
Display unit inspection... 16-105
Meter switch L inspection
(Drive monitor switch) 16-105
O/D OFF indicator 16-106
Troubleshooting 16-106 16-106
OFF indicator individual inspection ..... O/D
Total counter 16-106 ..... Meter
switch R inspection (ODO/TRIP/RESET) 16-106
Seat belt warning... 16-107
oil pressure warning 16-107
Brake warning/ 16-107
Parking brake warning 16-107
Door warning 16-107
shift position indicator 16-107
Reverse warning 16-107
ECT indicator light 16-107
disconnection warning 16-107
window defogger 16-108
Preparation items 16-108
Parts diagram 16-108
Printed hot wire inspection, correction/ 16-109
Printed hot wire inspection 16-109
Printed heat wire correction 16-109
Individual inspection/ 16-110
front window defogger switch 16-110
Rear window defogger switch 16-110 16
Defogger relay (front, rear) 16-110
horn 16-111
Prepared items. 16-111
..... 16-111
Individual ..... inspection/
16-112 Horn ..... relay 16-112
horn switch 16-112
★Cruise control 16-113
Prepared items. 16-113
Parts layout diagram 16-114

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Functional check... ····· 16-115
input point ····· 16-116
Cruise control cable inspection, adjustment ····· 16-117
Troubleshooting ····· 16-117
How to proceed with troubleshooting ····· 16-117
Pre-inspection ····· 16-117
Diagnosis check ····· 16-117
Troubleshooting by diagnosis code 16119
Troubleshooting by problem phenomenon ····· 16-123
★Cruise control ····· 16-131
★Fu Cang configuration diagram ····· 16-131
★Points to note when installing and removing the cruise control· ····· 16-131
Individual inspection/ ····· 16-132
cruise control switch ····· 16-132
Stop lamp switch.... ····· 16-132
neutral start switch ····· 16-132
Cruise control actuator ····· 16-133
spiral cable ····· 16-133
cruise control computer ····· 16-134
Auto Clock ····· 16-136
Prepared items. ····· 16-136
auto clock ····· 16-136 16-136
configuration diagram ····· Futsui
Individual inspection ····· 16-136
Clock ASSY inspection ····· 16-136
audio· ····· 16-137
Preparation items ····· 16-137
Parts layout ····· 16-137
diagram Troubleshooting/ ····· 16-138
雑 sound questionnaire ····· 16-138
Precautions during inspection ····· 16-138
Inspection using audio diagnosis
<Receiver with CD changer control function) 16139
Device code, diagnosis code list 16-141
Radio receiver ASSY· ····· 16-144
Deconfiguration diagram ····· 16-144
Amplifier antenna ASSY ····· 16-144
radio speaker ASSY ····· 16-145
Deconfiguration diagram ····· 16-145
stereo component
Amplifier ASSY &
Speaker ASSY (woofer) ··· 16-146
Configuration diagram ····· 16-146
Rear window print type
Antenna inspection and correction... 16-147
Rear window print antenna inspection ····· 16-147
Rear window printed antenna modification ····· 16-147
cigarette lighter ····· 16-148
Exploded configuration diagram ····· 16-148
Points to note during removal work ····· 16-148
Points to note during installation work ····· 16-148

16

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T0048264

ignition switch

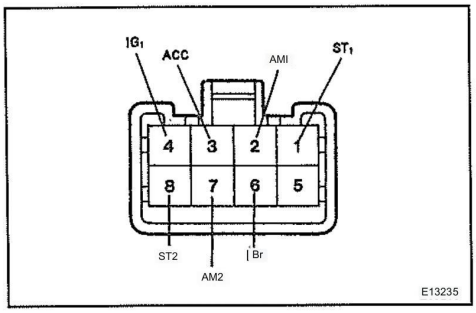
preparation

Goods

instrument

	09082-00012	toyota electrical tester	For ignition switch inspection

T0048265



Individual inspection

ignition switch

1 Continuity check

(1) Dimensions of the continuity point between each terminal.

basis ○—○導通あり

ID / Terminal name / switching	2 AM1	3 ACC	4 IG1	1 ST1	7 AM2	6 IGz	8 ST2
LOCK							
ACC	○	○					
ON	○	○	○		○	○	
START	○		○	○	○	○	○

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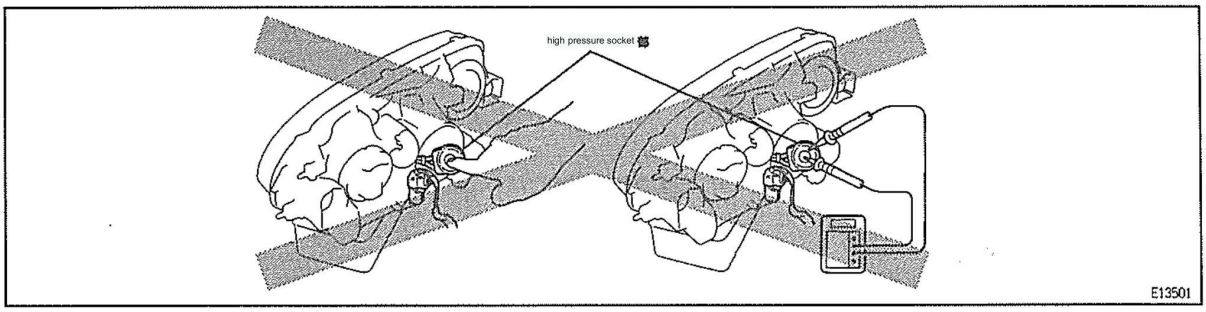
times

T004810

lighting

Notes

Discharge headlamp



1. If you touch the high voltage socket of a discharge headlamp, a high voltage of 20,000V will be generated momentarily when the light control switch is turned on, which may lead to a serious accident.

2. Measurements performed by connecting a tester to the high voltage socket of a discharge headlamp may cause serious accidents due to high voltage. Never do this as it may lead to a connection.

3. When working on discharge headlamps, do not expose them to rain or other water to prevent electric shock. Turn off the light control switch, disconnect the battery terminal, and disconnect the light control computer connector.

4. When working on discharge headlamps, turn on the bulb only after it has been completely assembled, and never turn it on without the bulb installed. 5. Do not use a power source other than the vehicle to turn on the discharge headlamps.

6. If the discharge headlamp (especially the light control computer) is scratched or subjected to impact. is replaced with a new one. ○The failsafe function may be malfunctioning even if it temporarily operates normally.

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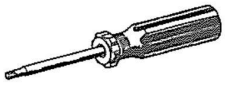
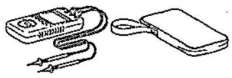
T0048970

preparation Goods

tool

	09041-00020	Torx screwdriver (T25)	For disassembling discharge headlamps
	09060-20030	clip remover	For clip removal

instrument

	09082-00030	toyota electrical tester	Each part is for use as a pointer.
	09083-00150	Test lead set	Each part is for use as a pointer.
headlamp tester 21401			For headlamp optical axis adjustment

Oils and fats Others

Test screen, headlamp cover, tape 51401	For headlamp optical axis adjustment
string 50201	License plate lamp removal/removal (Mark II/ Cresta)
protective tape 53501	For preventing scratches

16

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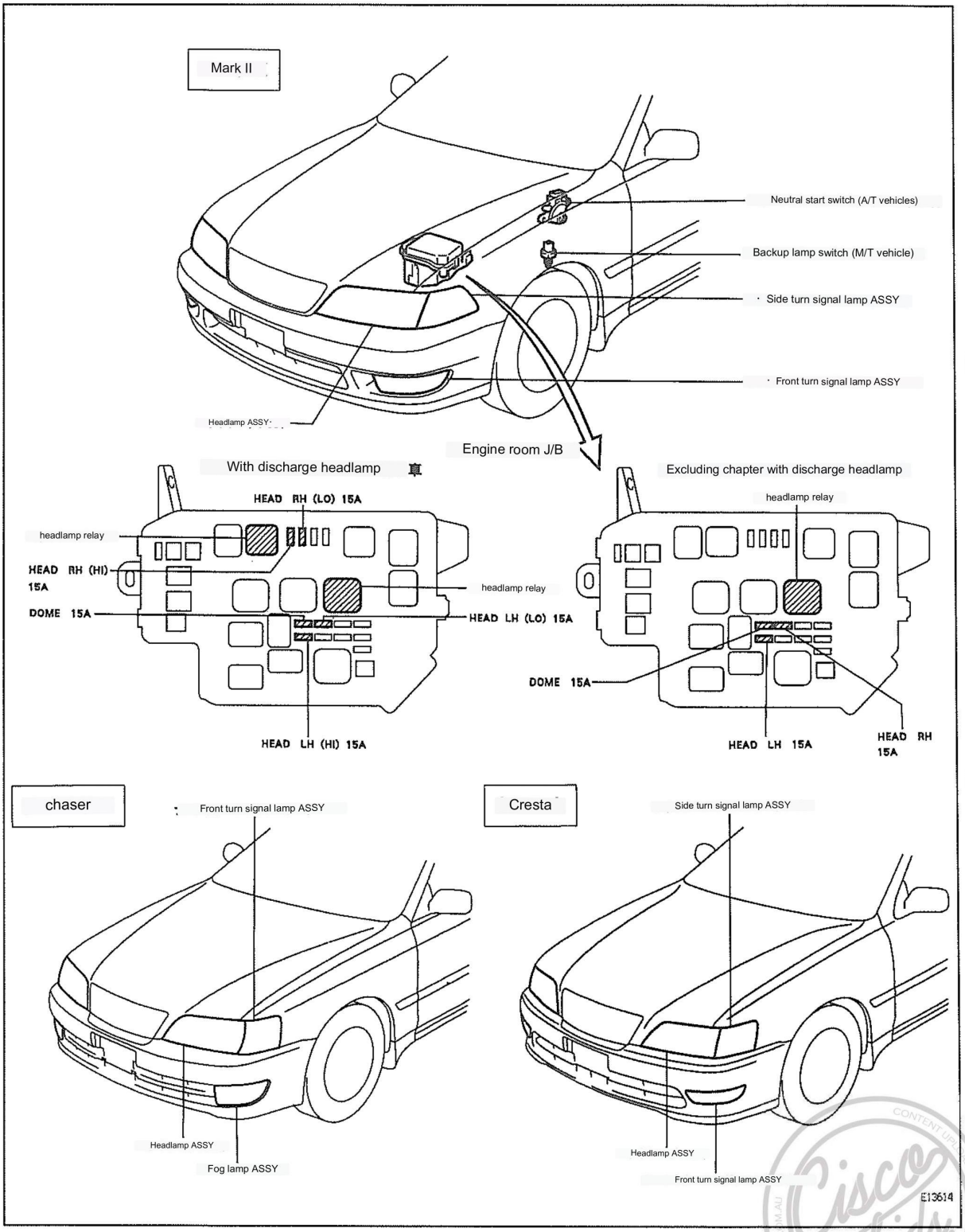
Parts layout diagram



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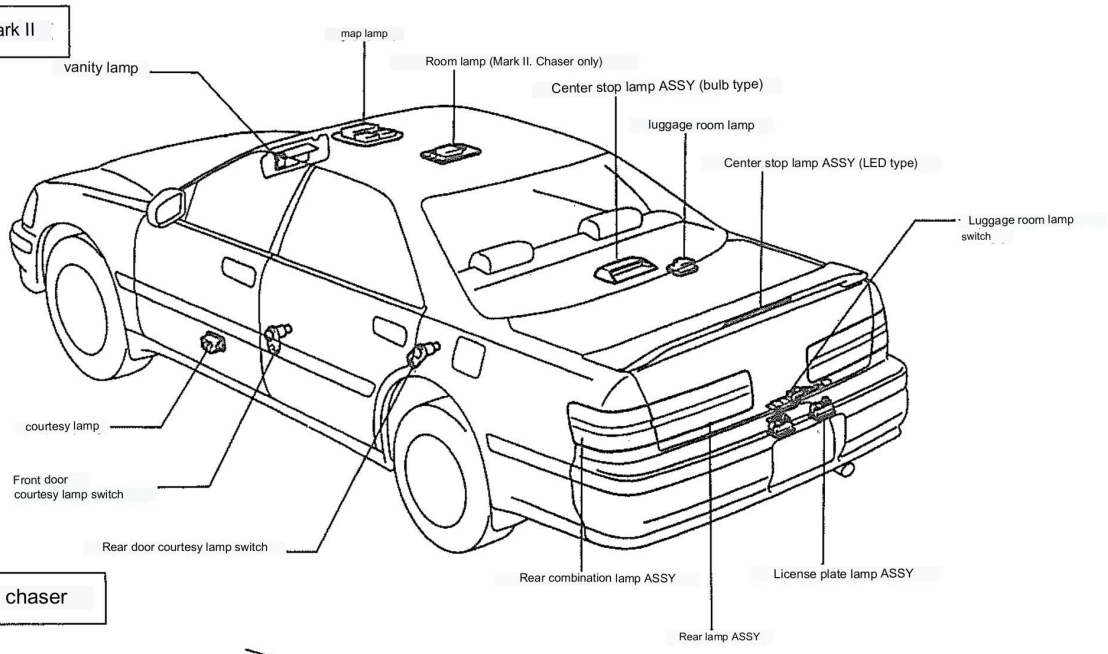
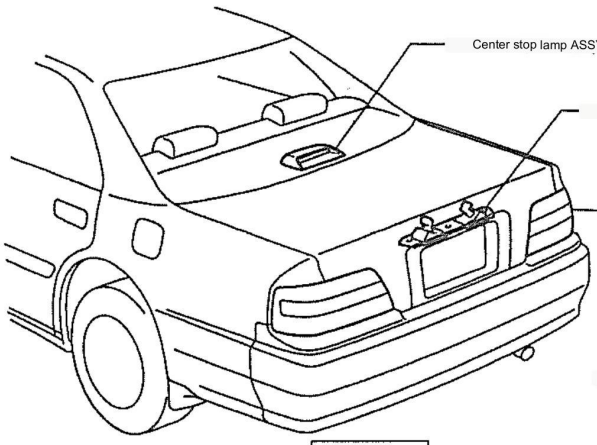
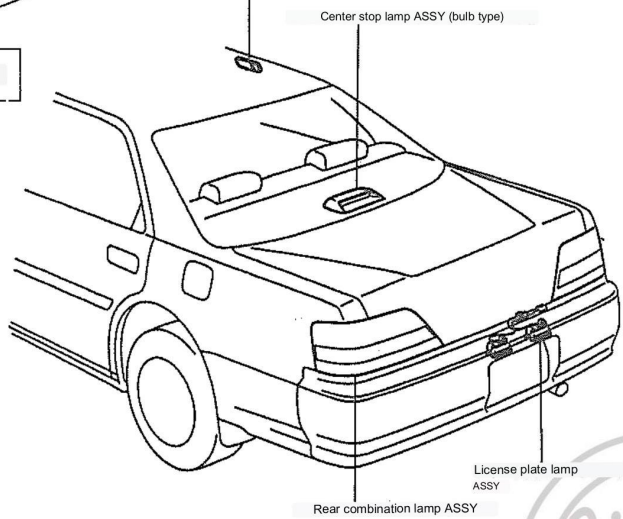
Mark II



chaser



Cresta



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times house times
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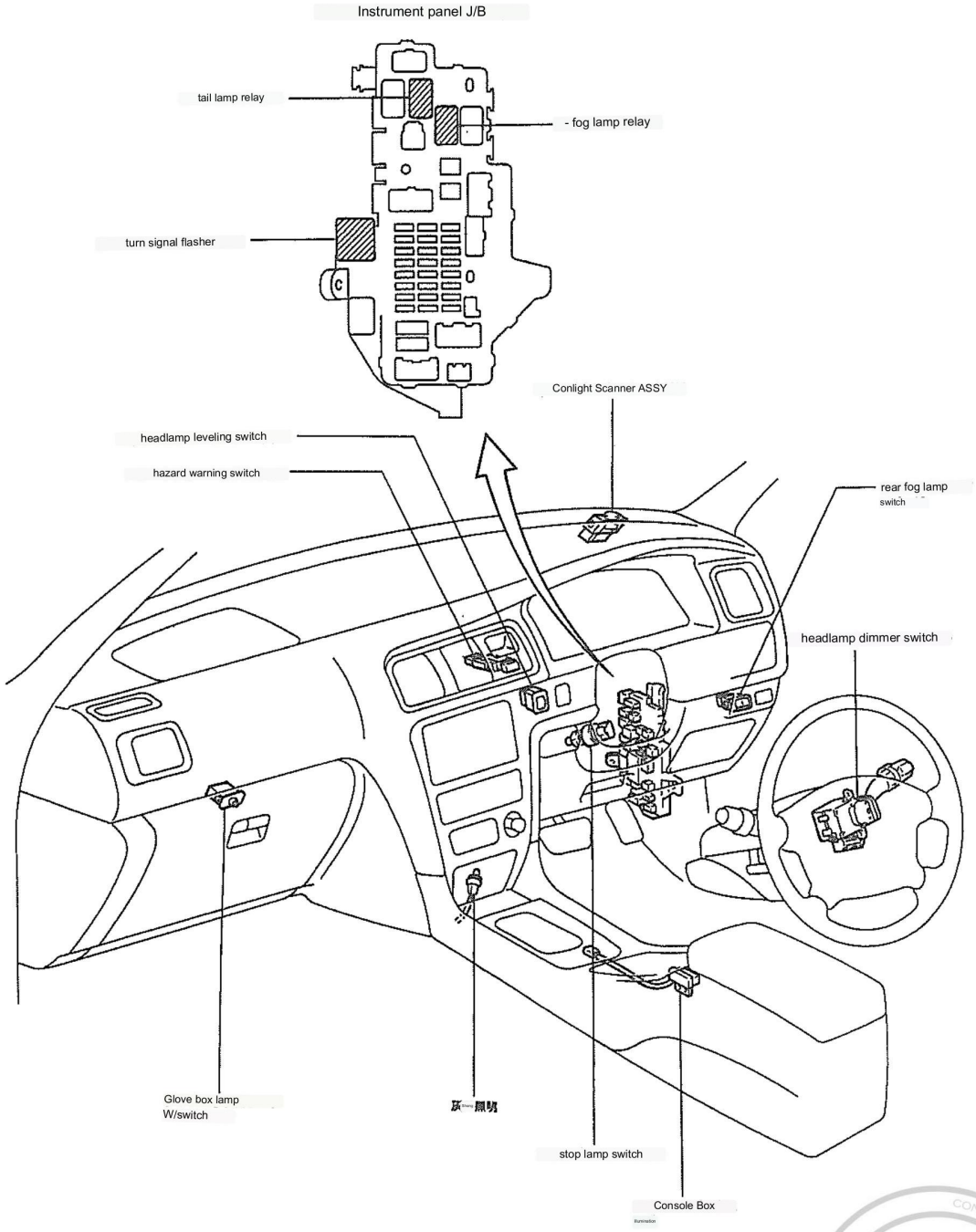

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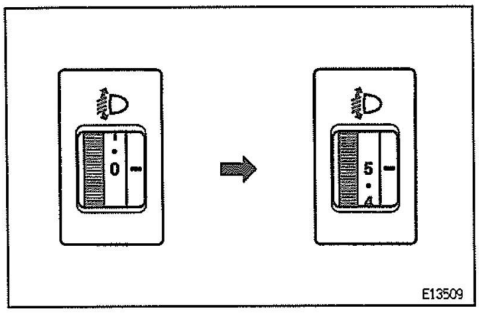

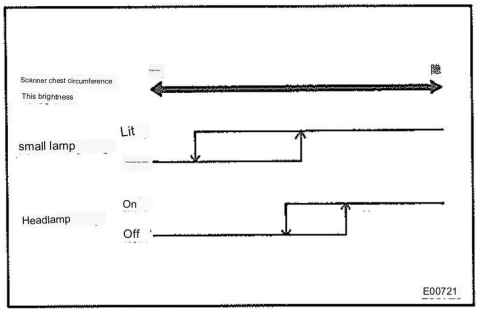

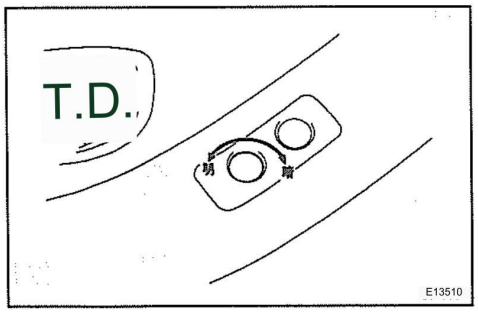

Functional check

discharge headlamp

1 Check the operation of the headlamp leveling motor (1) Adjust the optical axis of the headlamp (low beam).
(See "Headlamp" and "Optical axis adjustment")

(2) Turn on the headlights.

(3) Turn the leveling switch dial to 05.

Standard Lowering of the left and right optical axes

Conlight (excluding Tourer V, Tourer S, Tourer, Lulane G, Lulane)

1 AUTO operation check (automatic lighting check)

(1) Turn on the ignition switch.

(2) Set the light control switch to AUTO. (3) Gradually cover the top of the scanner with something that does not allow light to pass through.

Standard Lights up in the order of small lamps and headlamps.

2 AUTO operation check (Automatic turn-off check) (1) After checking the automatic turn-on, gradually expose the scanner.

standard Headlamps and small lamps turn off in that order.

3 Lamp off check

(1) Turn on the lamp automatically.

(2) Check that the lamp goes out under any of the following conditions. ① Turn off the light control switch. ② Increase the brightness around the scanner. ③ Open the driver's door with the ignition switch OFF.

4 Lamp lighting check

(1) Turn on the lamp automatically.

(2) Turn the ignition switch OFF, open the driver's door, and turn off the light.

(3) The lamp lights up again when the ignition switch is turned on. Check that the

5 Conlight Scanner Sensitivity Adjustment

(1) Turn the filter part of the Conlight Scanner to adjust the brightness of the automatic lighting.

Adjustment method

- Increasing the brightness of automatic lighting...Turn the filter to the left
- Decrease the brightness of automatic lighting...Turn the filter to the right

16

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Troubleshooting (discharge headlamp)

How to proceed with troubleshooting

(1) Check the battery voltage.

Standard value 10~14V (when engine is stopped)

(2) Inspect according to the chart corresponding to the malfunction phenomenon.

Inspection using chart by defect phenomenon

Malfunction phenomenon	Cause of problem
not light	• fuse blown •Defective headlamp relay • Defective headlamp dimmer switch · Wire harness disconnection or short • Defective valve · Light control computer failure
flickering	• Bad headlamp relay · Wire harness disconnection or short • Defective valve · Light control computer failure
dark	· Wire harness disconnection or short • Defective valve · Light control computer failure

Note: When inspecting the bulb and light control computer, replace it with one that lights up normally and check its operation to see if it is defective.
to decide.

JB3369

Fail safe function (Light control computer)

When input abnormality occurs	If the input voltage falls below the operating voltage (9~16V), the headlights will stop lighting, and once the input voltage returns to the operating voltage range, the headlights will turn on again. However, if the input voltage decreases after the bulb is turned on, the Stay lit. If an
Output abnormality detection (open/ short detection), lamp blinking detected	abnormality occurs in the output voltage (open or short detection) or a blinking symptom occurs in the pulp, stop the headlamp lighting and turn on the power again (headlamp dimmer switch OFF → ON). maintain that state until In this case, it is impossible to determine whether the malfunction is due to an output abnormality or other causes (such as a blown fuse), so first, replace the bulb after confirming that there are no abnormalities in the fuse and wire system (including the power supply). If the problem still persists, replace the light control computer.

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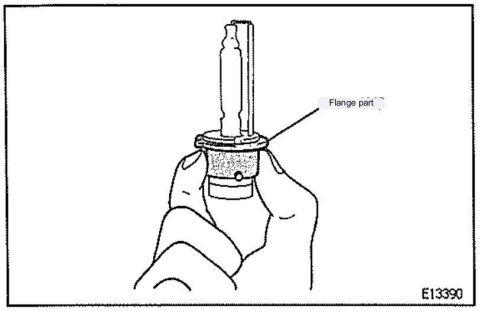

Precautions when replacing bulbs

Precautions when replacing bulbs for each lamp

discharge headlamp	Halogen lamps (headlamps and fog lamps)
1. The lamp gets hot when in use, so if there is oil or fat on the lamp surface, the lamp may become hot. The life of the lamp will be shortened.When replacing the lamp, hold the flange and avoid touching the glass with your hands.	←
2. Due to the high pressure inside the glass bulb, if it is dropped, bumped, or scratched, it may break and the glass may scatter.	←
3. If the bulb is left unplugged for a long time, dirt or moisture may enter the bulb, so prepare a new bulb before replacing the bulb.	←
4. Be sure to use genuine Toyota products for replacement valves.	4. Always use bulbs of the same wattage when replacing them.
5. Improperly installed sockets can cause malfunctions in lighting, and incorrectly installed socket covers can cause radio noise, so after replacing the bulb, make sure to securely fix the shield wire to the cord clamp. Attach the socket cover securely, being careful not to get caught in the high pressure release or cause scratches. After replacing the bulb, make sure to install it securely.	5. Improper socket installation may cause lens fogging or water intrusion. When replacing the valve, make sure to attach it securely.
6. Discard used bulbs without breaking them, as glass shards may scatter and cause injury.	←
7. Since it is not possible to determine whether a valve is defective by visual inspection, the valve should be inspected to ensure that there are no external scratches or damage, or damage to the filament. When inspecting, replace the bulb with one that lights up normally and turn it on. judge whether it is good or bad	judge visually

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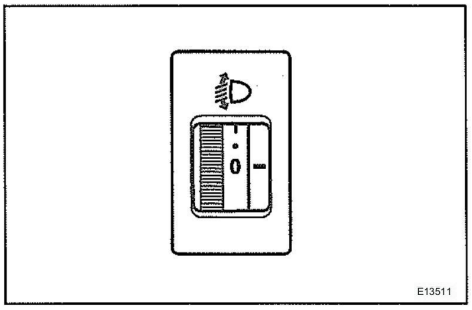


head lamp

high beam

Optical axis adjustment

1 Pre-adjustment work

(1) Regularly adjust tire pressure. (2) One person is in the driver's seat.

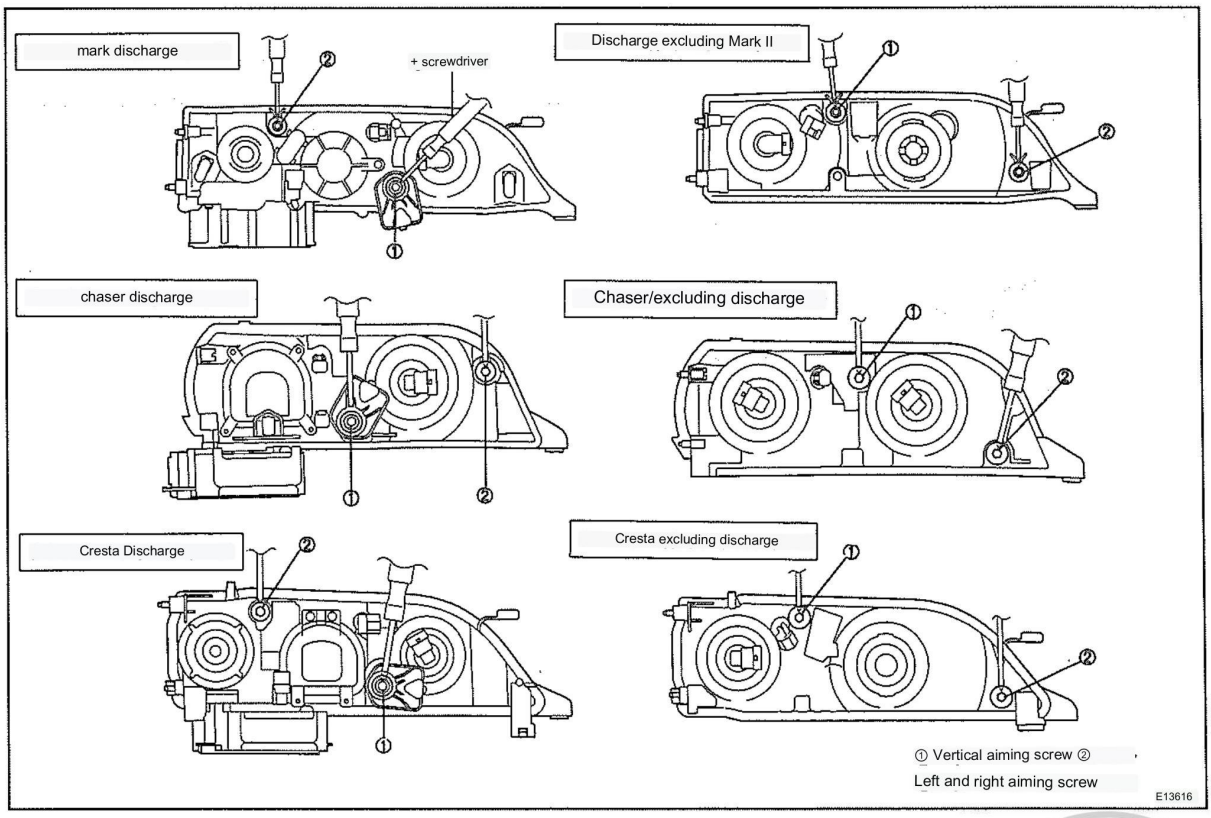
(3) Start the engine and charge the battery.

(4) Set the leveling switch dial to 0. (Discharge car with headlamp)

2 Optical axis adjustment

(1) Disconnect the light control computer connector. (2) Adjust the optical axis of the main running beam (high beam) based on the handling instructions for the headlamp tester you are using.

STD Adjust the aiming screw in the tightening direction (if adjusting in the loosening direction, loosen it once and then tighten it again).



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Light intensity check

1 Luminous intensity check

(1) After adjusting the optical axis, check the brightness using a headlamp tester.

standard More than 12,000 candelas. However, if it is less than 12,000 candela

If the main beam (high beam) and secondary beam (low beam)

The sum of beams) is 15,000 candela or more.

low beam

Optical axis adjustment confirmation

1 Pre-adjustment work

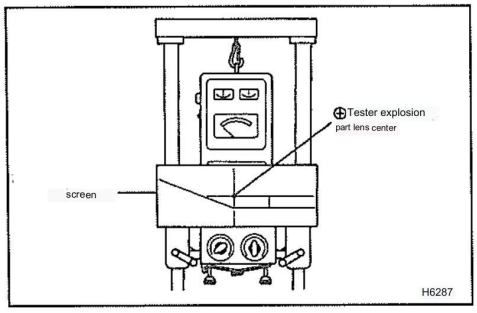
(1) Regularly adjust tire pressure.

(2) One person will be in the driver's seat.

(3) Start the engine and charge the battery.

(4) Set the leveling switch dial to 0. (Discharge

car with headlamp)



2 Check optical axis adjustment

(1) Set the distance between the tester and headlamp lens to 3m. (2)

Place the tester directly facing the vehicle.

(3) Set up the headlamp tester.

For optical headlamp tester

① Align the center of the tester's condensing lens with the center of the headlamp.

For projected headlamp tester

1 Set the tester's angle adjustment knobs to 0 for both the top, bottom, left, and right.

(2) Align the tester's projection screen with the center of the headlamp. (4) Align the center hole of the adjustment screen with the center of the tester's condensing lens.

Attach with adhesive tape, etc.

(5) Turn on the headlights with low beam.

(6) The light and dark dividing line of the beam projected on the screen is at the reference line.

Make sure there is.

If it deviates significantly from the reference line, adjust the bright/dark dividing line to the reference line, set the vehicle and tester again to adjust the high beam optical axis, and confirm that the high beam optical axis is within the inspection standard.

16

do. <Reference>

30mm at a position 100mm to the right from the center. As you move away from the center to the right,

Yes, the bright/dark dividing line will go

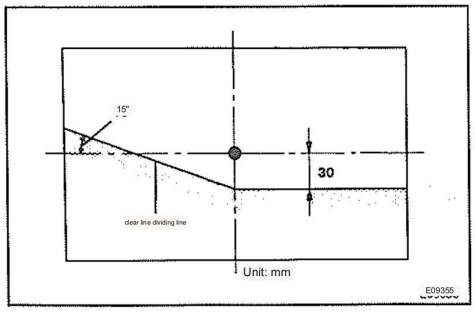
• down. Inspection standards (high beam)

Downward deflection••••Within 1/5 of the installation height at 10m forward

To the left...20cm or less at 10m in front

To the right... ••••••••••Less than 20cm at 10m in front

(The headlight on the right side is less than 10cm)



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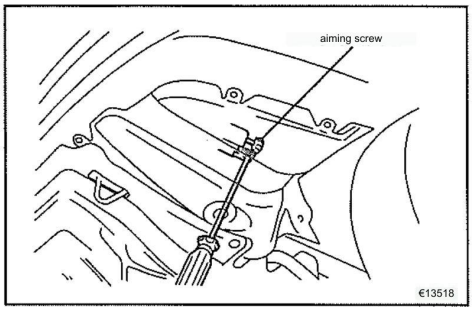


TC048073

fog lamp (chaser)

〈参考〉 The fog lamp optical axis adjustment of the Mark II Cresta can be done at the same time as the headlamp optical axis adjustment because the reflector is integrated with the headlamp.

Optical axis adjustment (vertical direction)

1 Optical axis inspection

Standard Illuminate within 40m

2 Optical axis adjustment

(1) Adjust by turning the aiming screw.

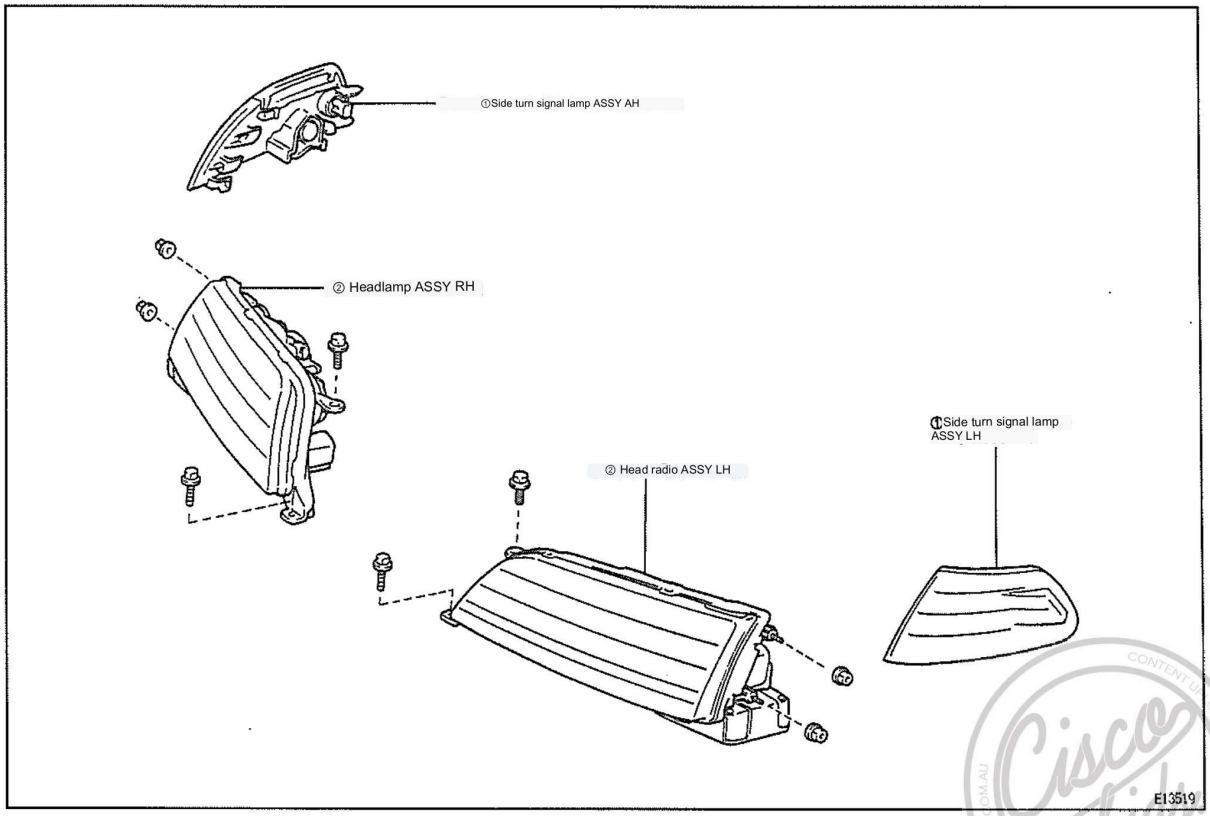
<Reference> .Tighten the aiming screw to point the lamp upward; loosen it to point downward.

T0040802

Headlamp ASSY & Side turn signal lamp ASSY

Mark II

Detachment configuration diagram



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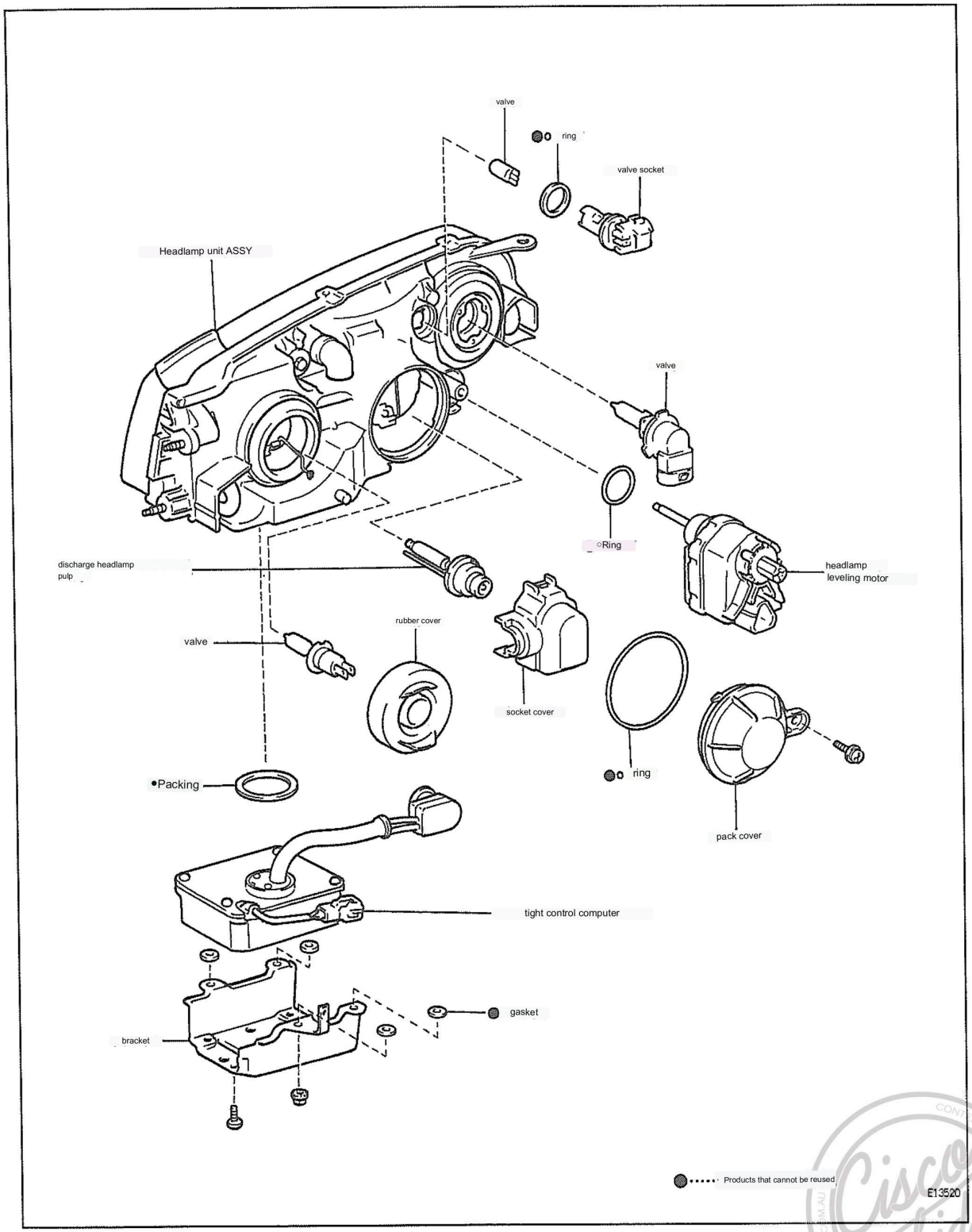
Exploded diagram (discharge headlamp)



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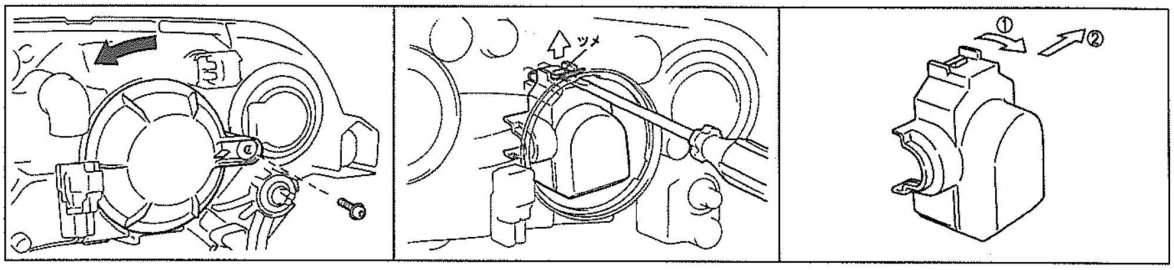
Bulb replacement (discharge headlamp)

<reference> To replace the fog lamp bulb, it is necessary to remove and install the side turn signal lamp ASSY.

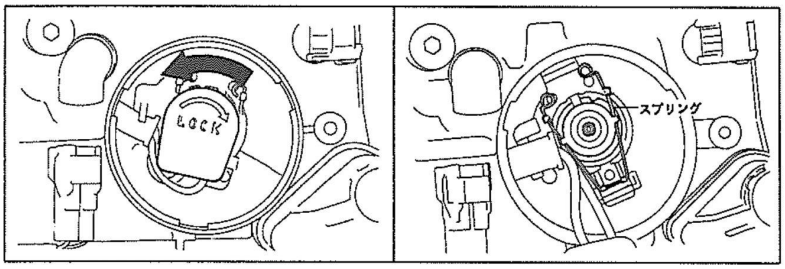
low beam

1 Check precautions for handling work
("Caution" - "Discharge Headlamp" and
(See "Precautions when replacing bulbs" and "Precautions when replacing bulbs for each lamp.") 2 Removing the headlamp ASSY

① Back cover removal ② Removing the socket cover ③



④ Removing the valve socket ⑤ Removing the valve



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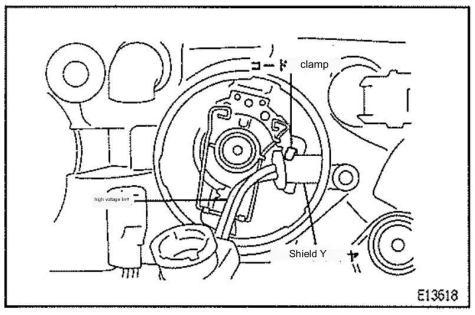

Points to note when installing valves

(1) Securely attach the shield wire to the cord clamp.

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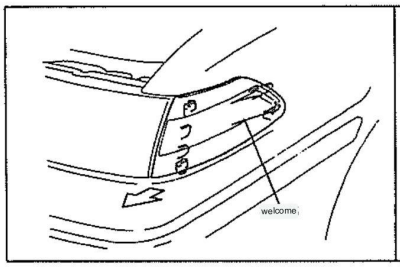
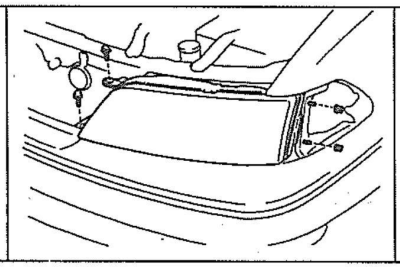
Headlamp ASSY & Side turn signal lamp ASSY removal

Excluding discharge headlamps

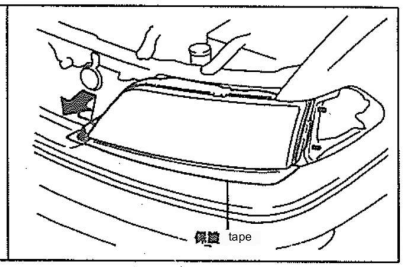
① Push the protrusion forward



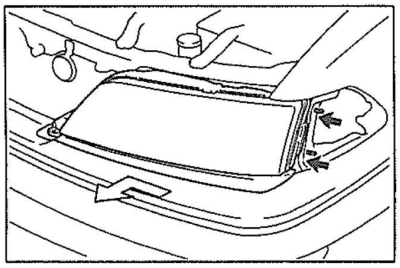
②－1



two



②－3



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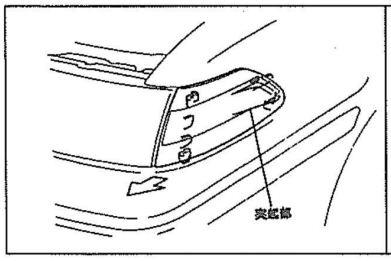
discharge headlamp

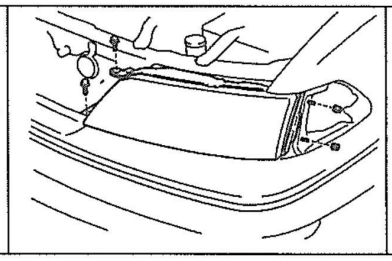
1 Check work precautions

(Refer to "Precautions" and "Discharge Headlamp")

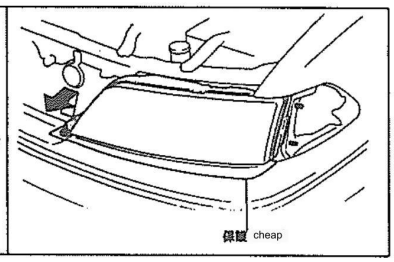
① Push the protrusion forward



2-1



②－2



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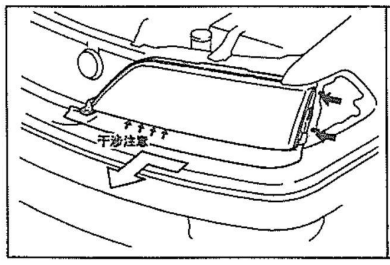

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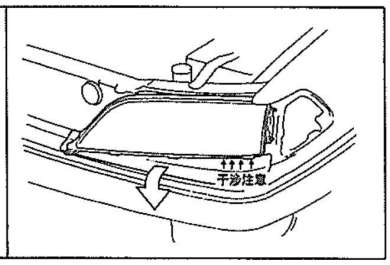

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Technical report

Headlamp ASSY (discharge headlamp)

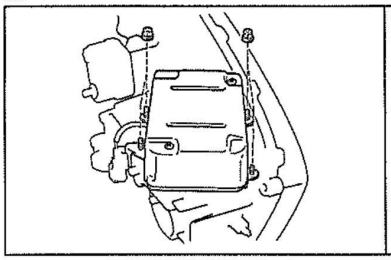
Disassembly

注意 Use new packing and rings when assembling.

1 Check precautions for handling work.
("Caution", "Discharge Headlamp" and
"Precautions when replacing bulbs" - "Precautions when replacing bulbs for each lamp")

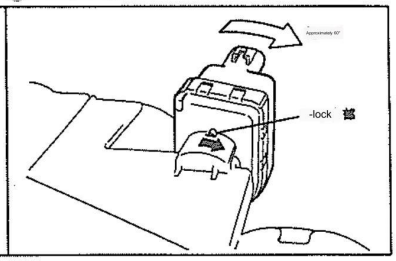
2 Valve removal
(See "Bulb Replacement (Discharge Headlamp)")

(1) Removing the light control computer



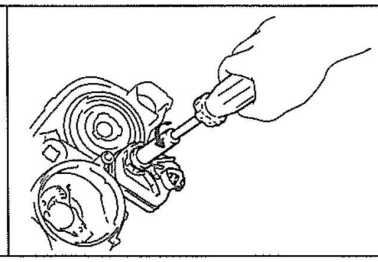
(参考) If you cannot remove the socket of the light control computer, turn the upper and lower aiming screws counterclockwise so that the reflector is facing upward to make it easier to remove.

(2) Removing the headlamp leveling motor



③

<Reference> If the fit is tight, turn the upper and lower aiming screws counterclockwise to , create some clearance, then release the lock.



<Reference> It may be turned several dozen times.

JB3760

Points to note during installation work

1 Inspect and adjust the headlamp optical axis (see “Headlamp” and “Optical axis adjustment”)

16

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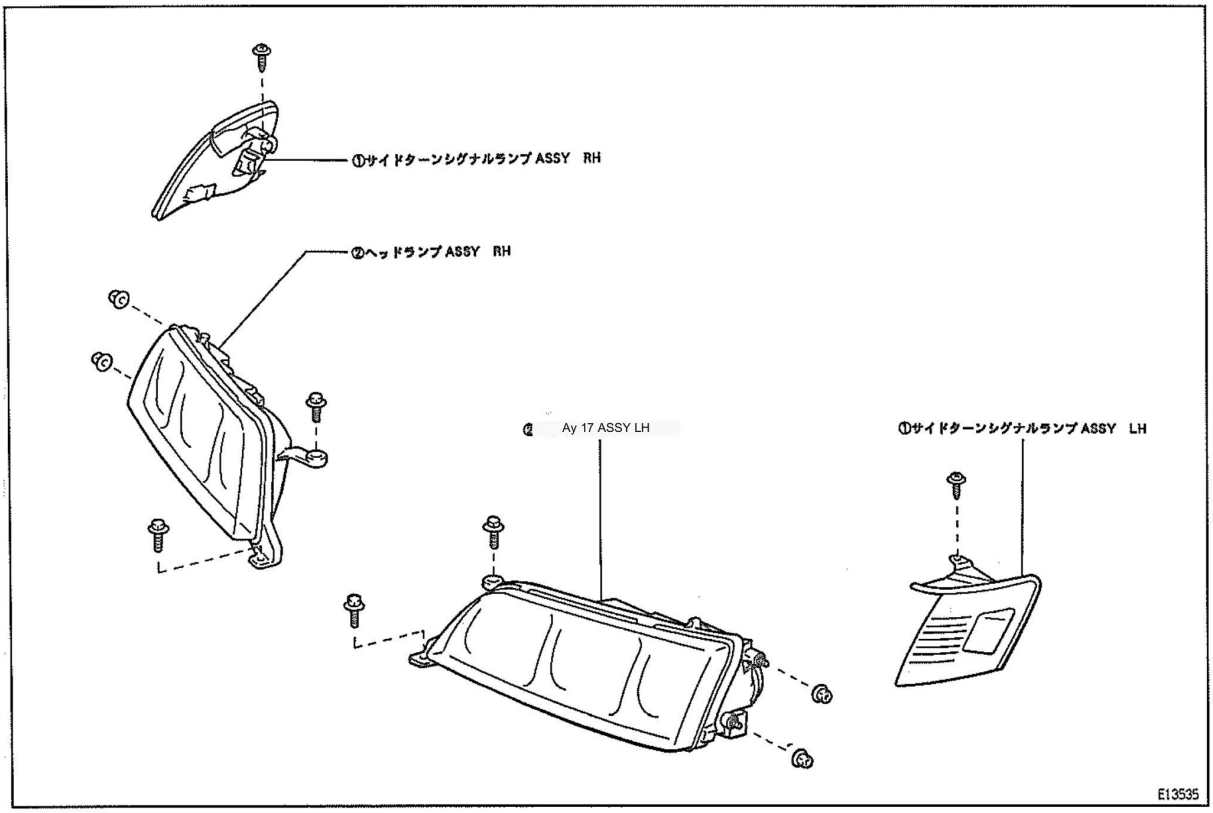
Cresta

Cultivation configuration diagram



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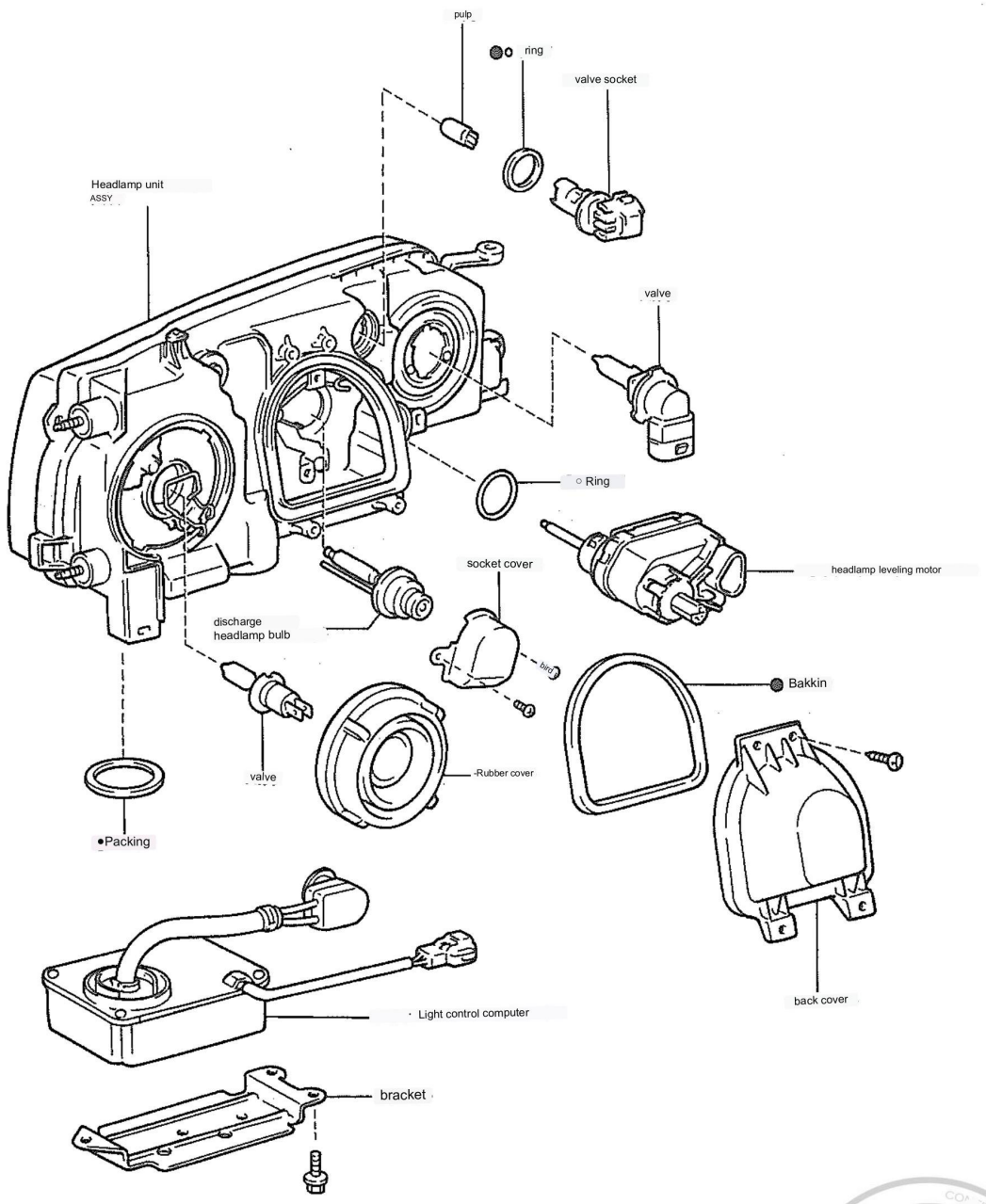
Exploded diagram (discharge headlamp)



Hui family times
E13536
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Bulb replacement (discharge headlamp)

〈参考〉 Fog lamp bulb replacement, side turn signal lamp

ASSY must be removed and installed.

low beam

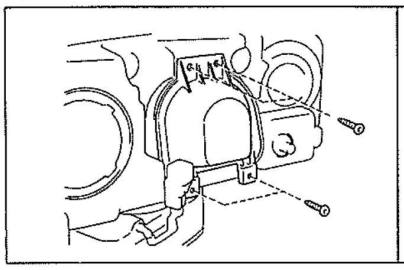
1 Check the handling

precautions (“Caution”, “Discharge Headlamp” and

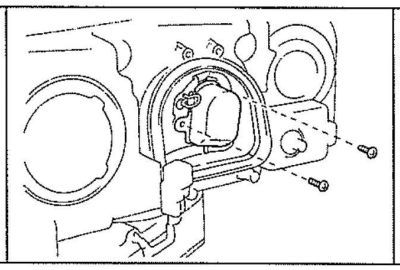
(Refer to "Precautions when replacing bulbs" - "Precautions when replacing bulbs for each lamp")

2 Removing the headlamp ASSY

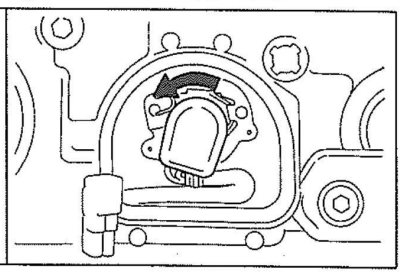
① Back cover removal



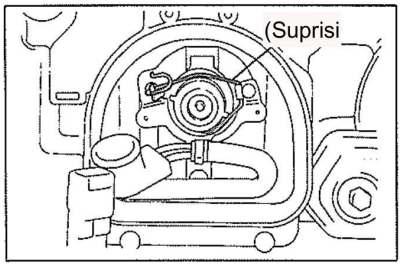
② Removing the socket cover



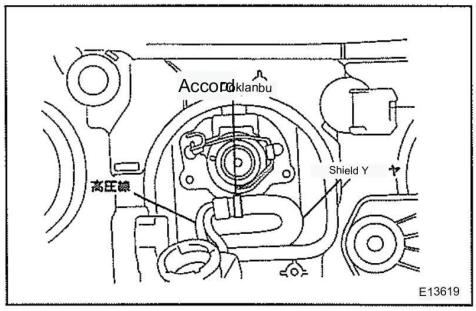
③ Valve socket removal



④ Valve removal



JB3752



Points to note when installing valves

(1) Securely attach the shield wire to the cord clamp.

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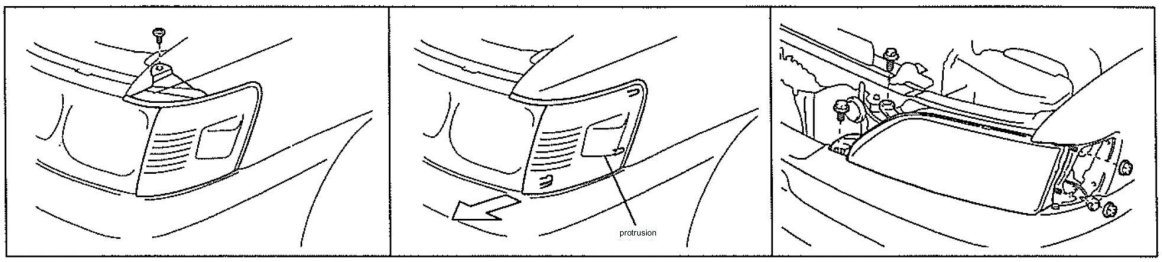
Headlamp ASSY & Side turn signal lamp ASSY removal

Excluding discharge headlamps

0-1 ①-2 Push the protrusion forward (2-1



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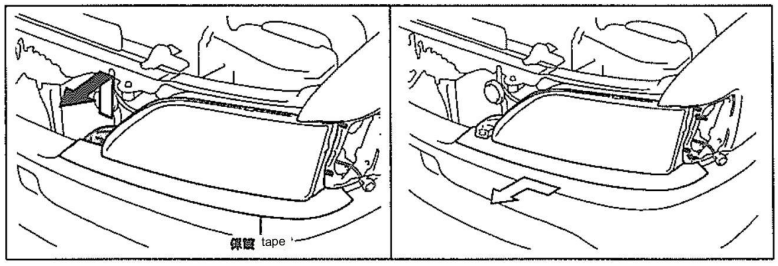


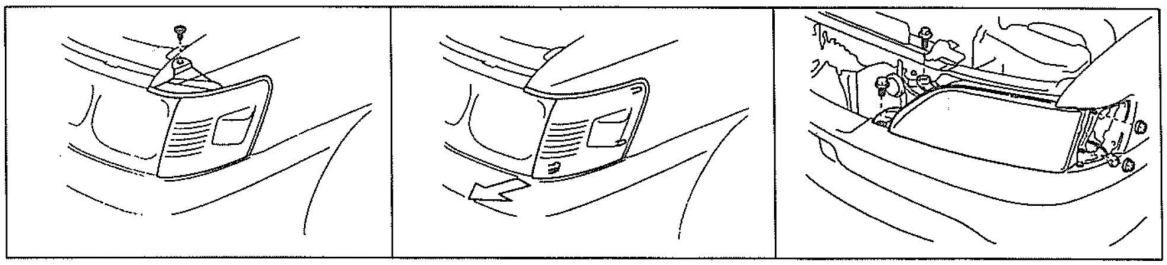
JB3753

discharge headlamp

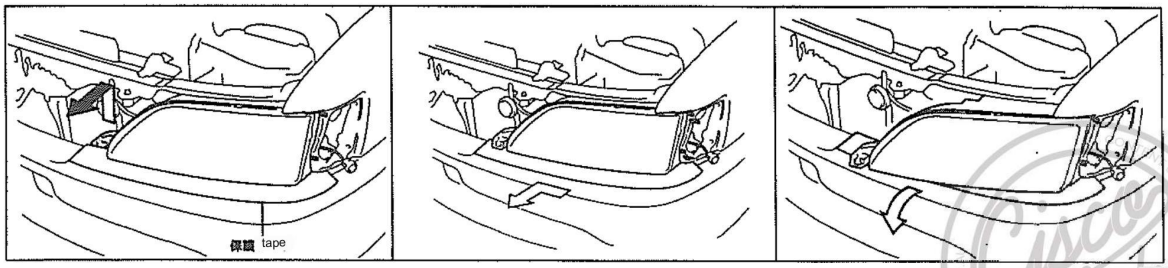
1 Check work precautions

(See "Precautions" - "Discharge Headlamp")

1-1 ①0-2 Push the protrusion forward ② -1



②－2 ②－3 ②-Four



JB3754

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Headlamp ASSY (discharge headlamp)

Disassembly

Use new packing and rings when assembling.

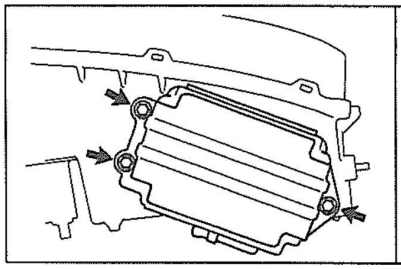
1 Confirmation of precautions for handling work

(Refer to "Precautions" - "Discharge headlamp" and "Precautions when replacing bulbs" and "Precautions when replacing bulbs of each lamp")

2 valve removal

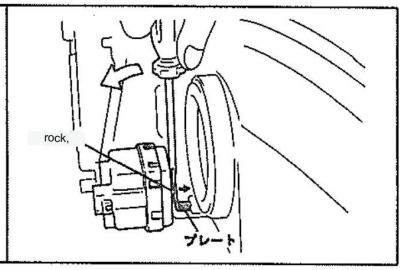
(See "Bulb Replacement (Discharge Headlamp)")

① Light control computer removal



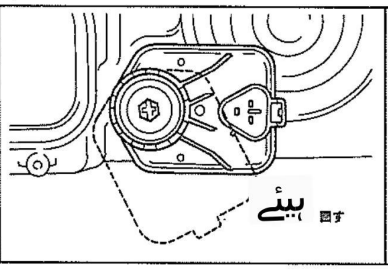
<Reference> If the socket part cannot be removed, turn the upper and lower aiming screws to the left and face the reflector upward to make it easier to remove.

② Headlamp leveling motor removal

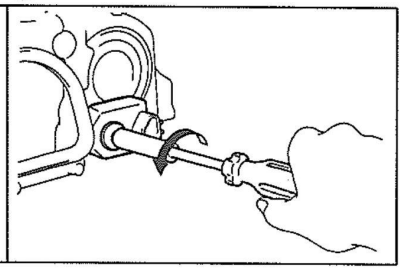


<Reference> If the fit is tight, turn the upper and lower aiming screws counterclockwise to create some clearance, then release the lock.

③



④



<Reference> It may be turned several dozen times.

JB3761

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Points to note during installation work

1 Inspect and adjust the headlamp optical axis (see "Headlamp" - "Optical axis adjustment")

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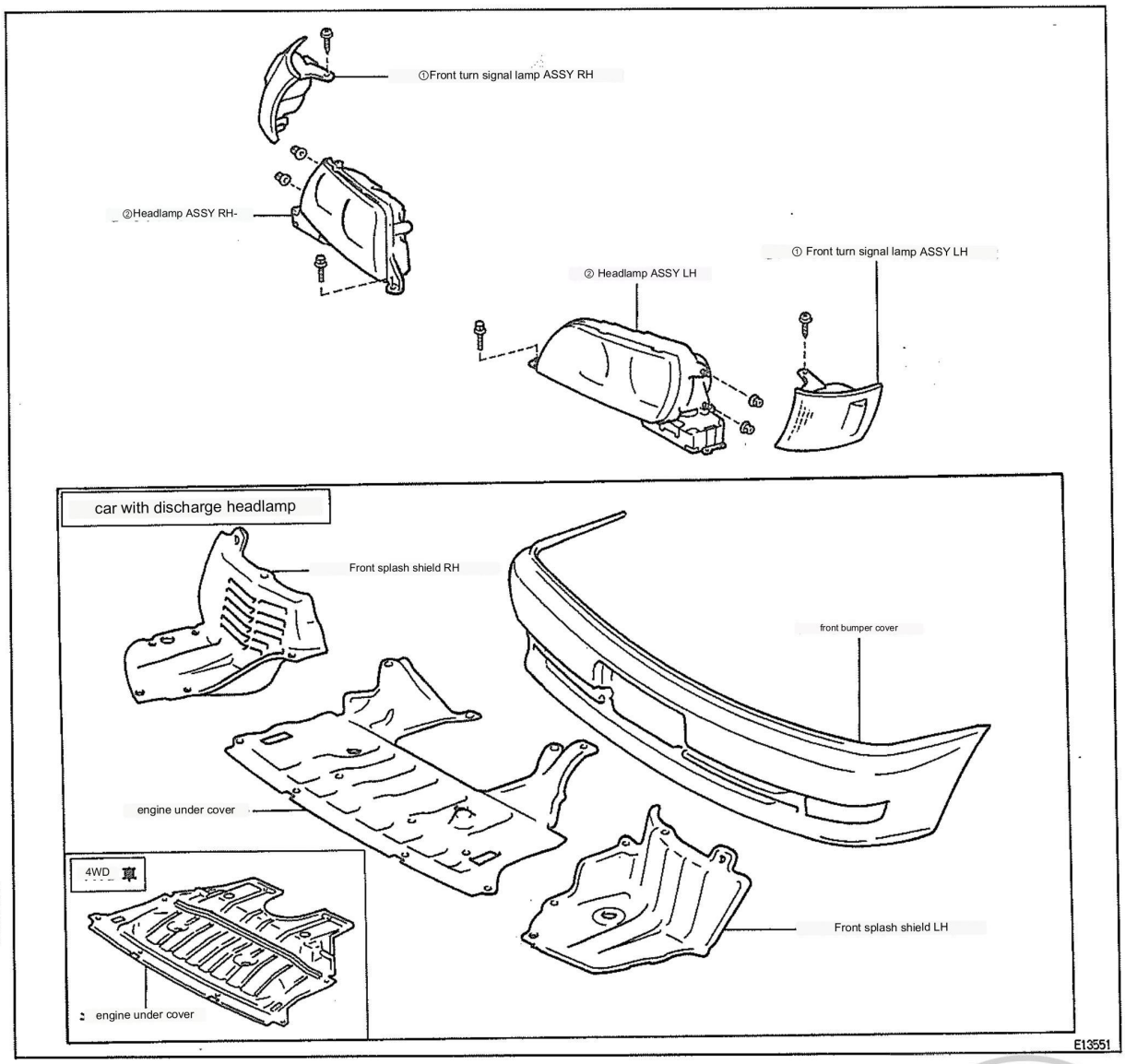
T0049888

Headlamp ASSY & Front turn signal lamp ASSY

chaser

Detachment configuration diagram



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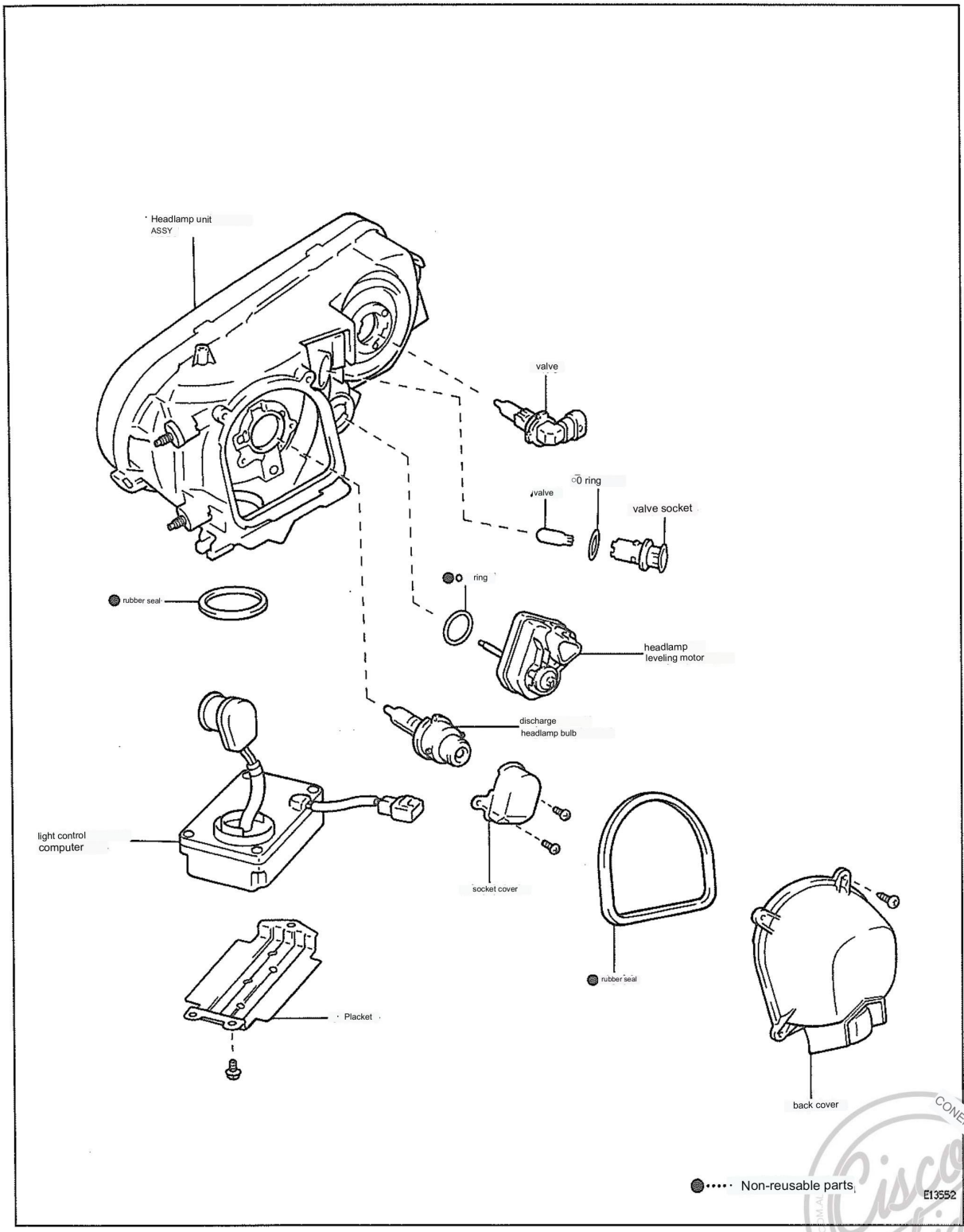
Exploded diagram (discharge headlamp)



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Bulb replacement (discharge headlamp)

1 Handling Check work precautions

("Caution", "Discharge Headlamp" and

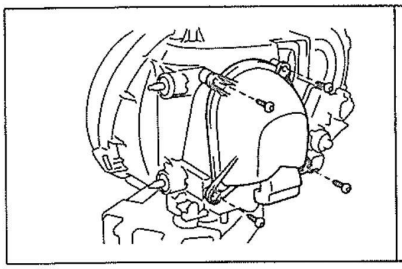
(Refer to "Precautions when replacing bulbs" - "Precautions when replacing bulbs for each lamp")

2 Front bumper removal

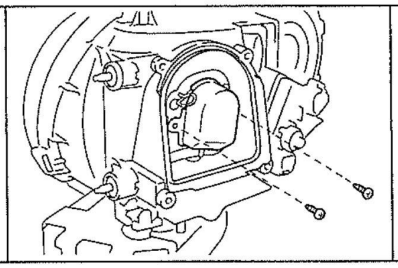
("Body" - see "Front Bumper")

3 Headlamp ASSY removal

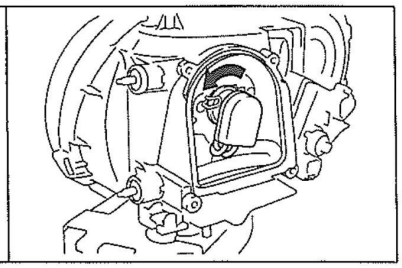
① Remove the back cover



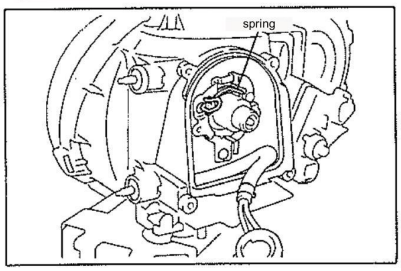
② Removing the socket cover



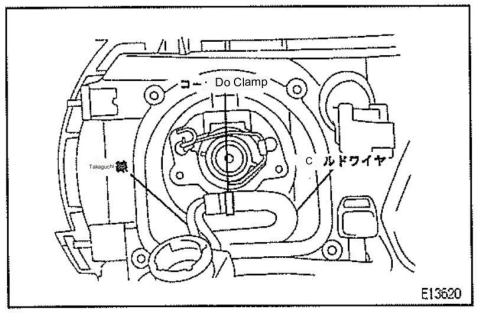
③ Remove the pulp socket



4 Valve removal



JB3755



Points to note when installing valves

(1) Securely attach the shield wire to the cord clamp.

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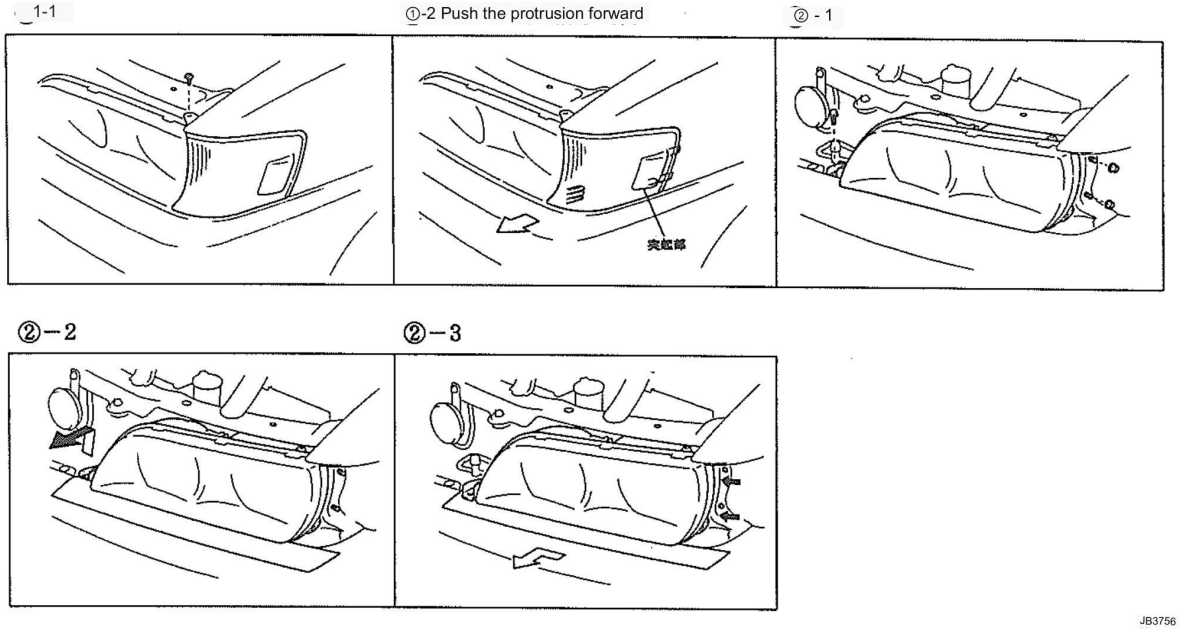
Headlamp ASSY & Front turn signal lamp ASSY removal

Excluding discharge headlamps

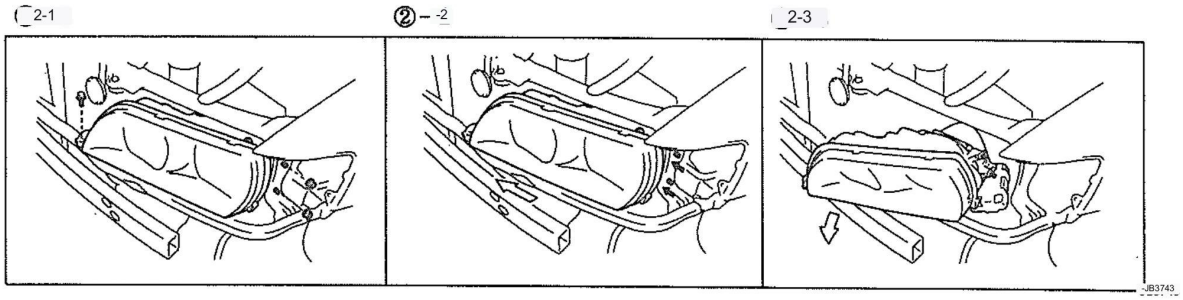


JB3756

discharge headlamp

1 Check work precautions.
(See "Precautions" - "Discharge Headlamp")

2 Removal of the front bumper (See "Body" - "Front Bumper")



JB3743

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Headlamp ASSY (discharge headlamp)

Disassembly

注意 Use new packing and rings when assembling.

1 Handling. Check work

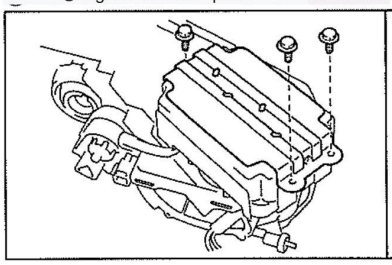
precautions ("Caution", "Discharge Headlamp" and

(Refer to "Precautions when replacing bulbs" - "Precautions when replacing bulbs for each lamp")

2 Valve removal

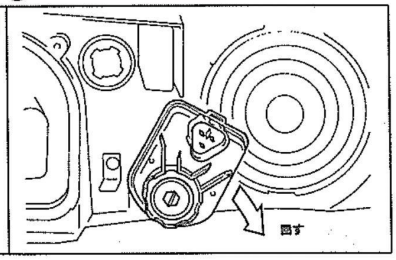
(See "Bulb Replacement (Discharge Headlamp)")

① Light control computer Removal



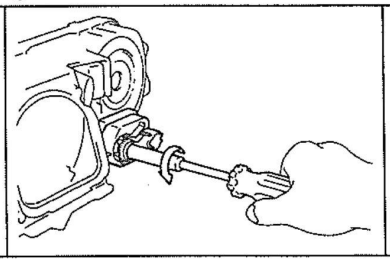
<reference> If the socket part cannot be removed, turn the upper and lower aiming screws to the left and face the reflector upward to make it easier to remove.

② Headlamp leveling motor removal



(3)

<Reference> If the fit is tight, turn the upper and lower aiming screws counterclockwise to , create some clearance before turning the motor.



<Reference> It may be turned several dozen times.

JB3762

Points to note during installation work

1 Inspect and adjust the headlamp optical axis (see "Headlamp" - "Optical axis adjustment")

16

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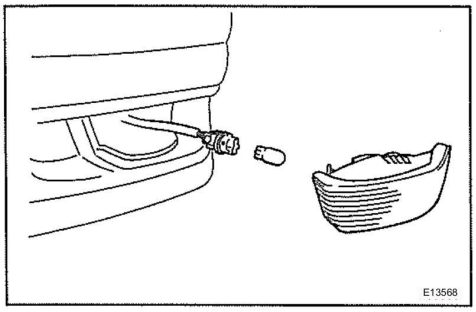
T0048503



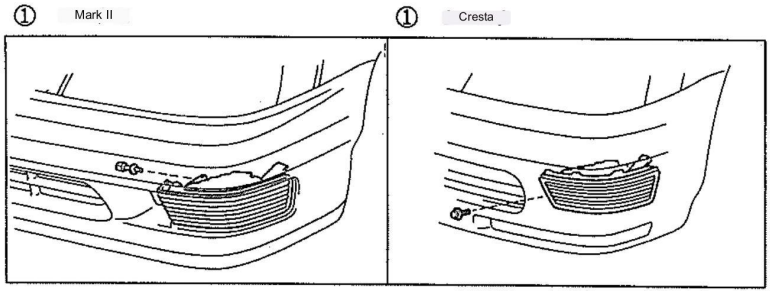
Front turn signal lamp ASSY

(Mark II Cresta)

valve replacement

<reference> Replace the bulb after removing the lamp assembly.

Front turn signal lamp ASSY removal



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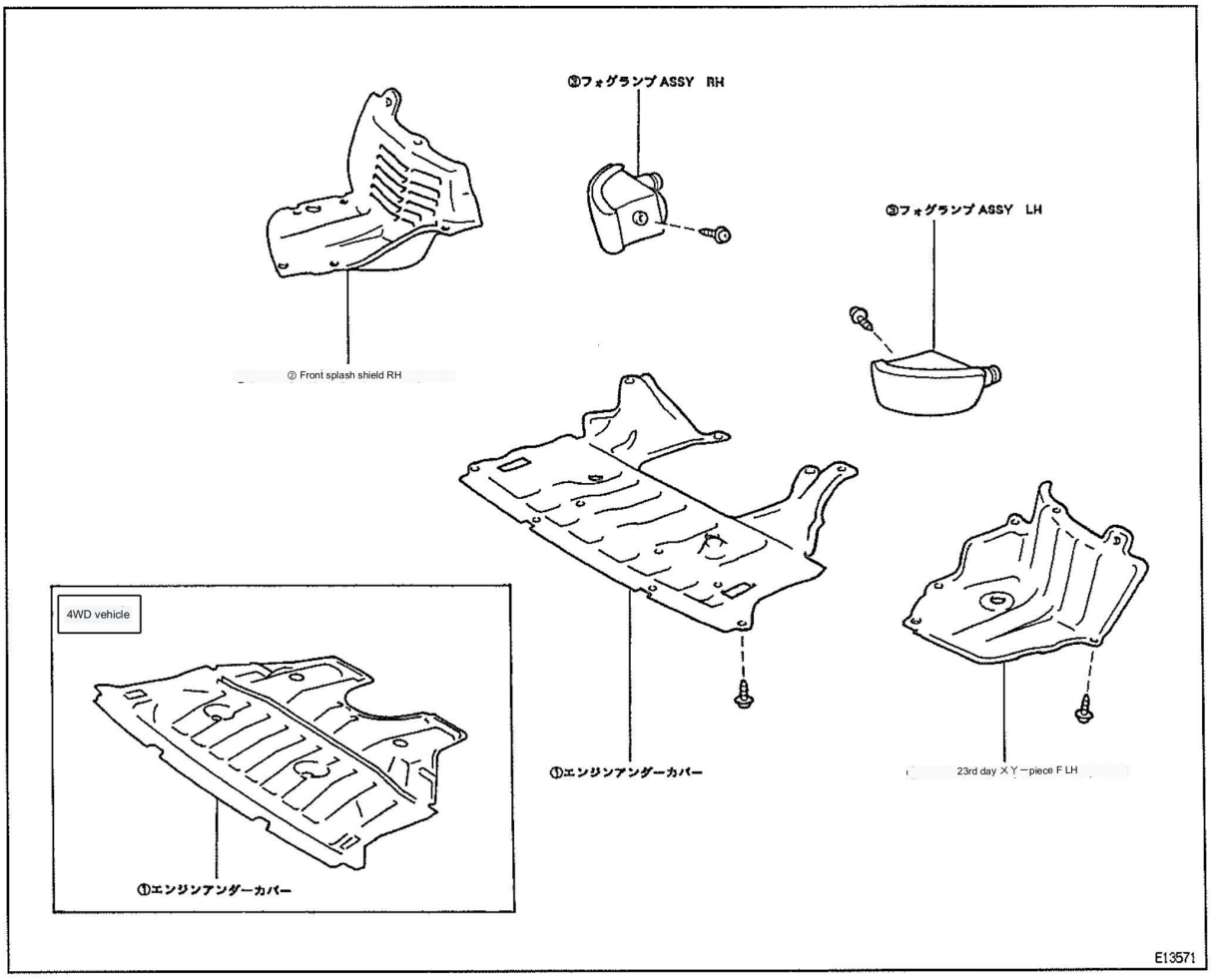
T0048804

755T ASSY

Deconfiguration diagram



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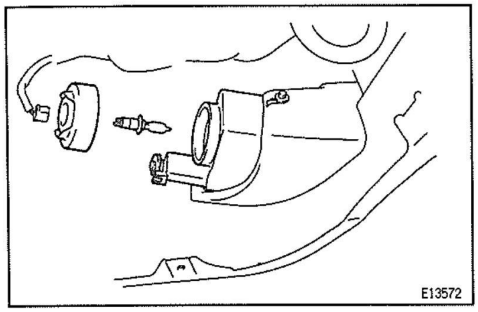
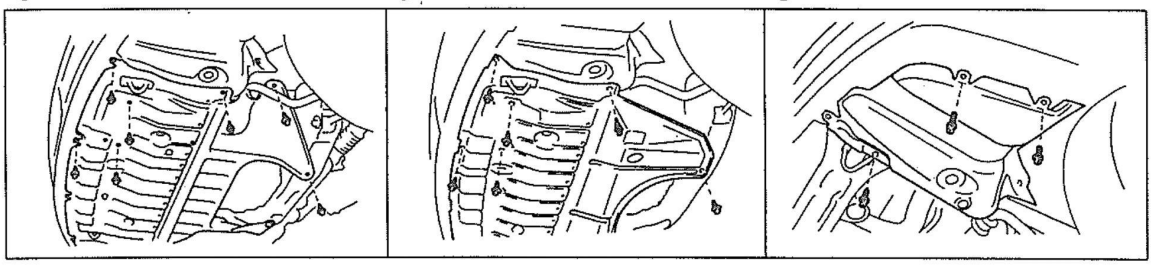


valve replacement

1 Partial removal of engine under cover 2 Partial removal of front fender liner

Fog lamp ASSY removal

① Partial cover only (2WD) (1) Cover part only (4WD) (2) Part of the splash shield only



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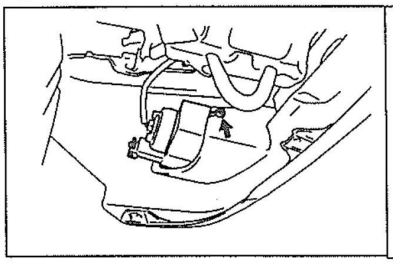

Remove the screw.

JB3757

Points to note during installation work

1 Fog lamp optical axis inspection and adjustment (see "Fog lamp" - "Optical axis adjustment")

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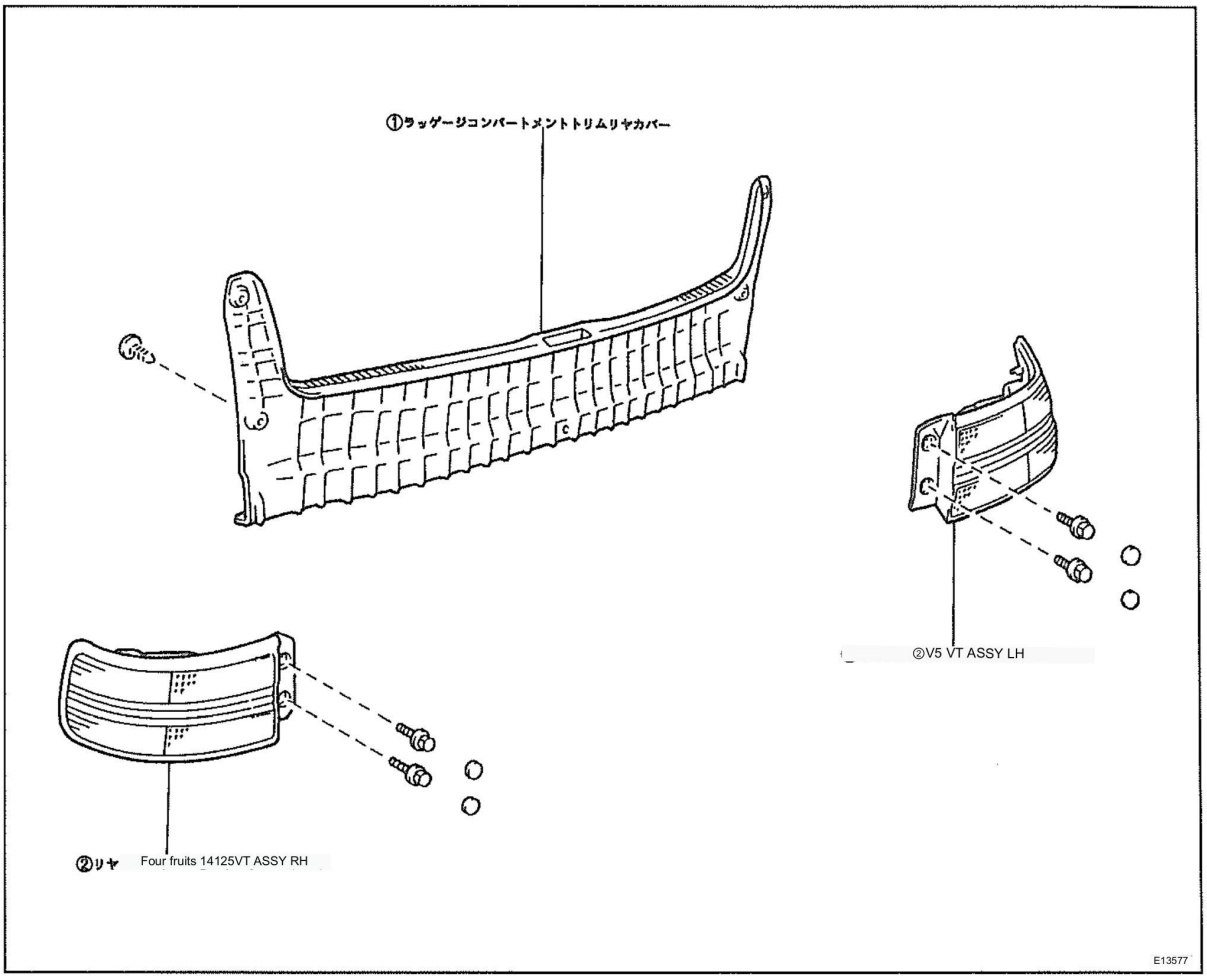
T0049805

J⊃SOEイ ー∃25T ASSY

Delivery configuration diagram



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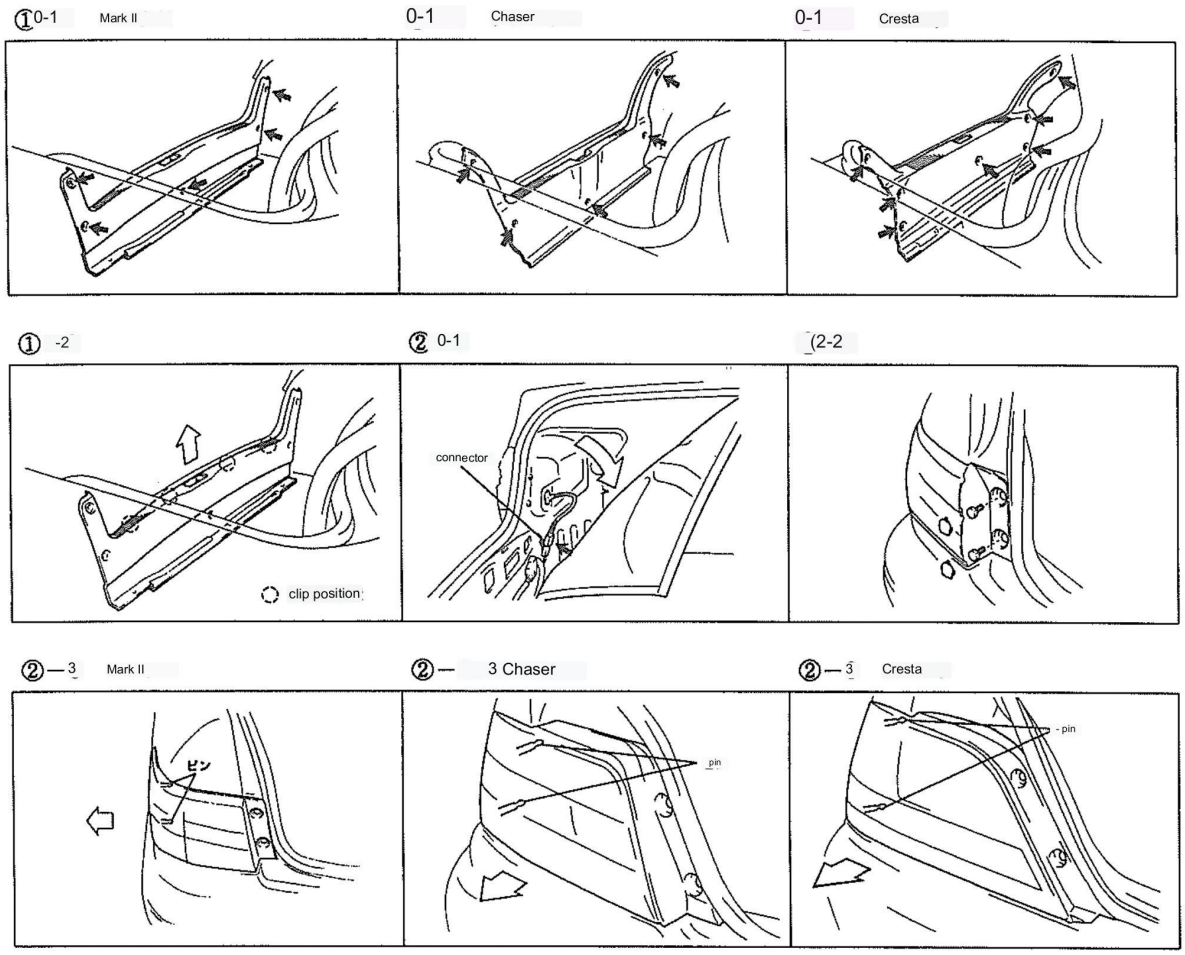
Rear combination lamp ASSY removal



JB3763

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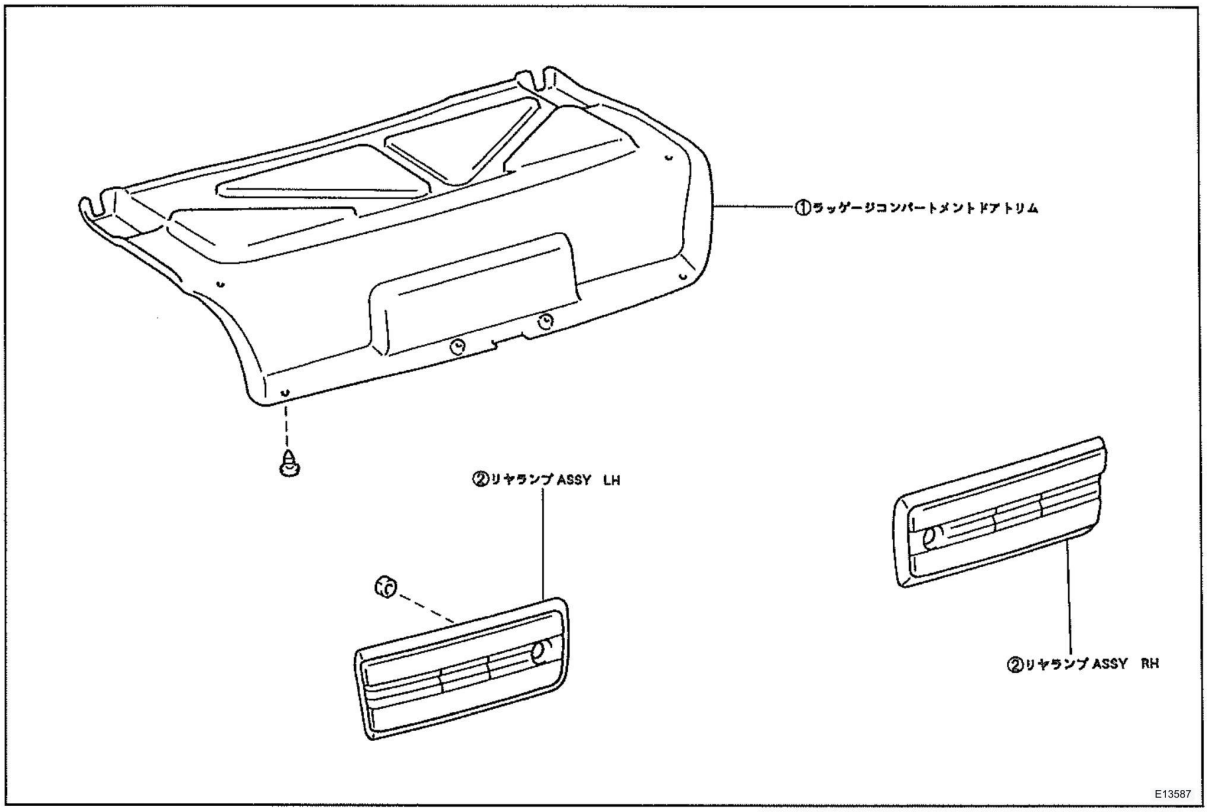
T0048508

JP5VT ASSY (Ichiku II)

Delivery configuration diagram



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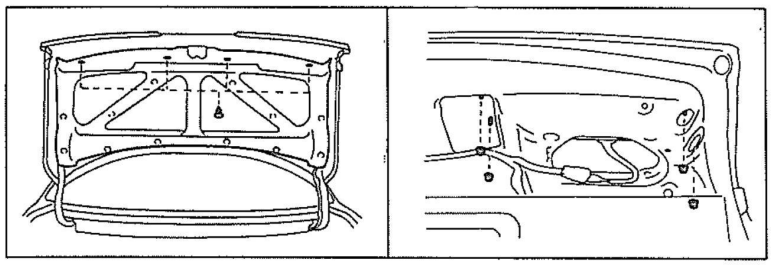
1 Trim section only ②



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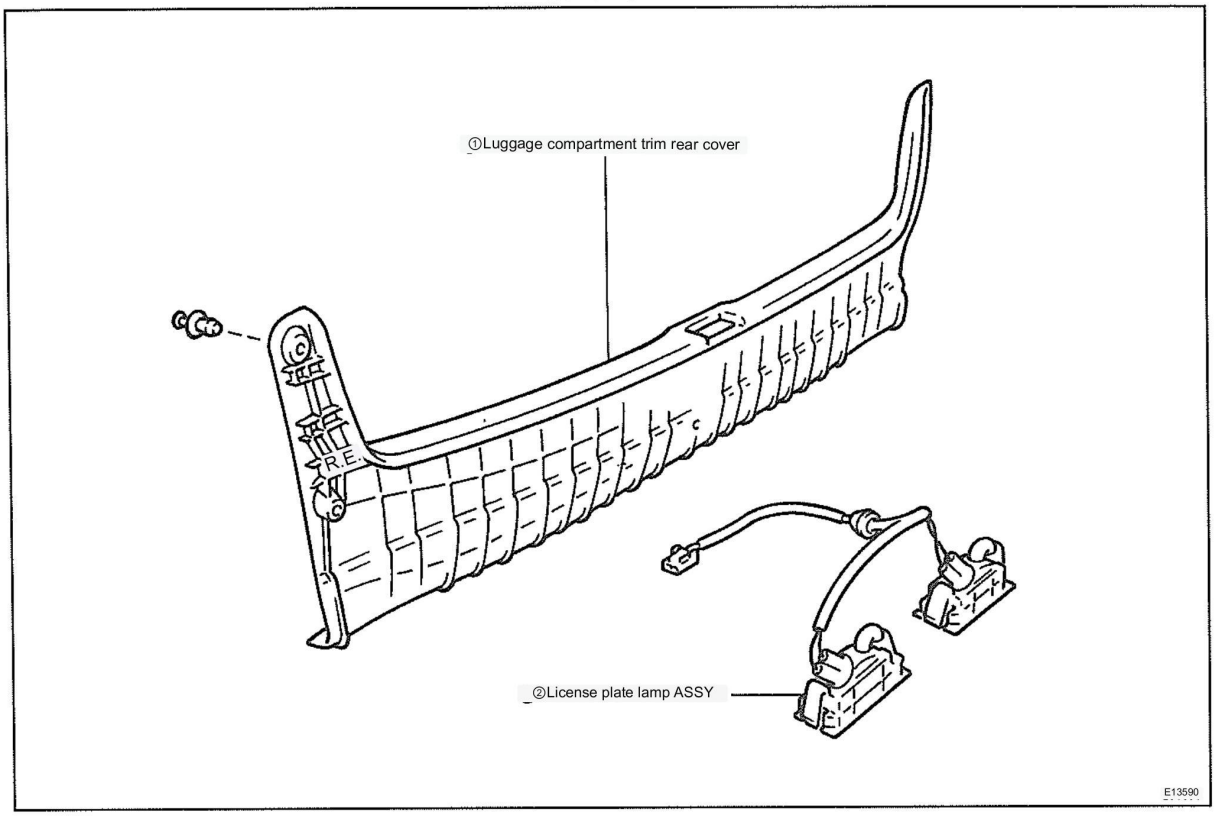
T0045807

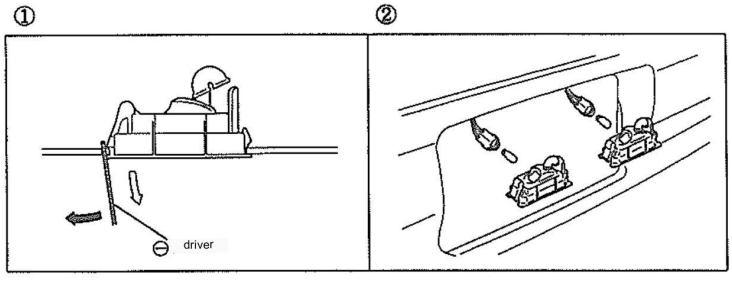
License plate lamp ASSY

Mark II Cresta

Detachment configuration diagram



valve replacement



JB3746

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Conveyance box
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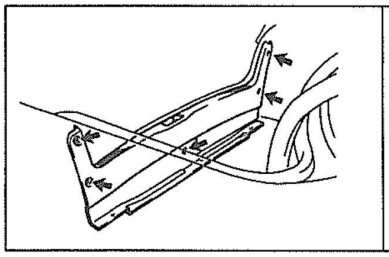
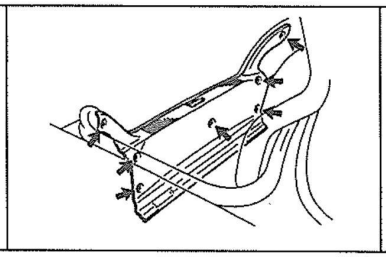
0-1 マークⅡ



0-1 Cresta



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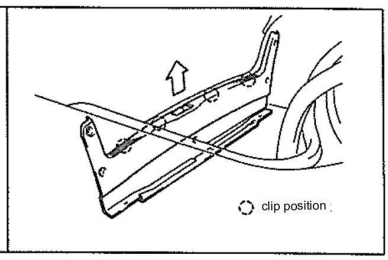
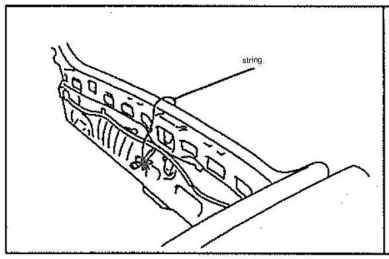
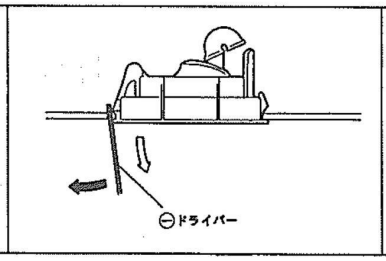


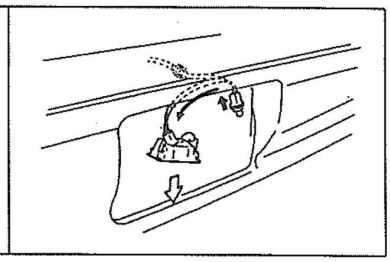
②－1



②－2



②－3



JB3758

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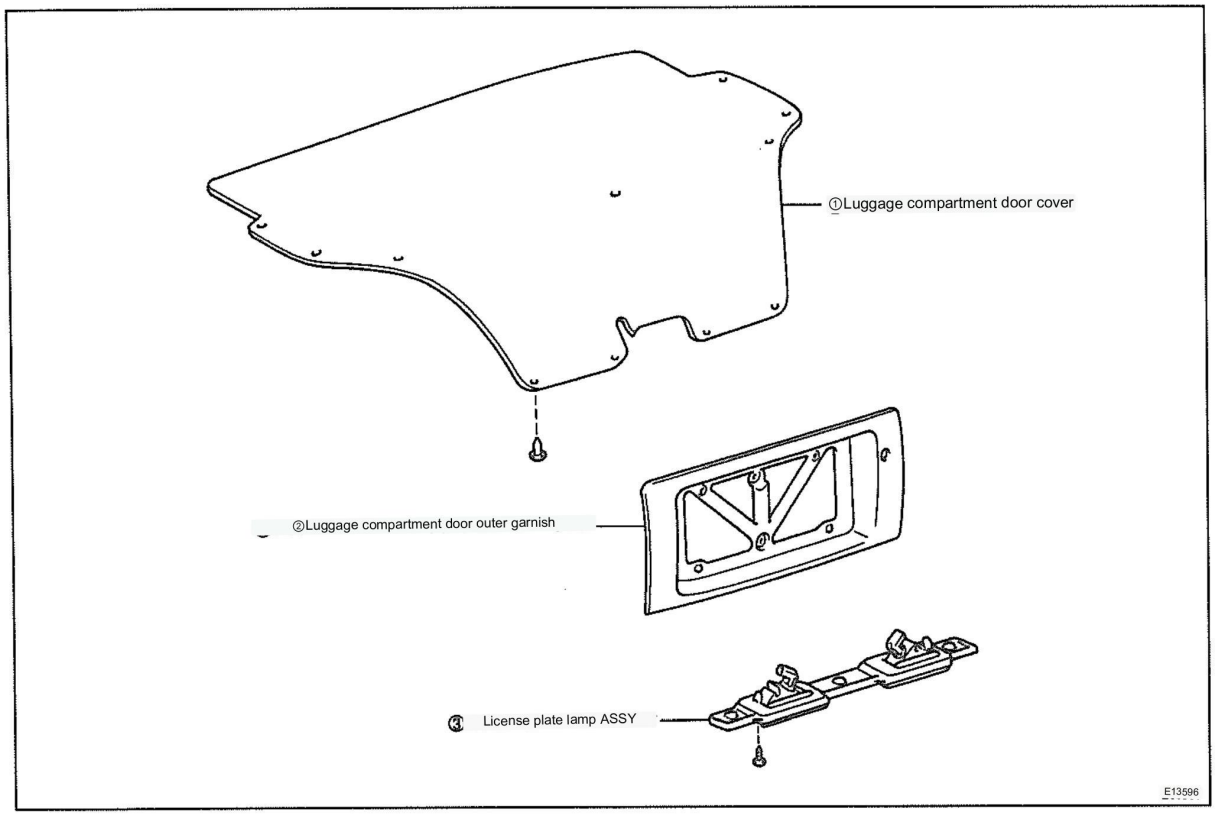
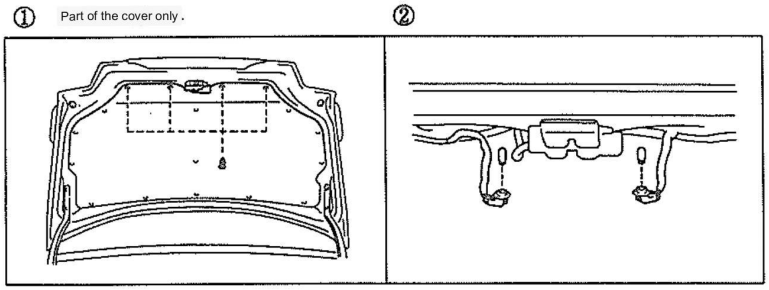
chaser

De-tanning configuration diagram



valve replacement



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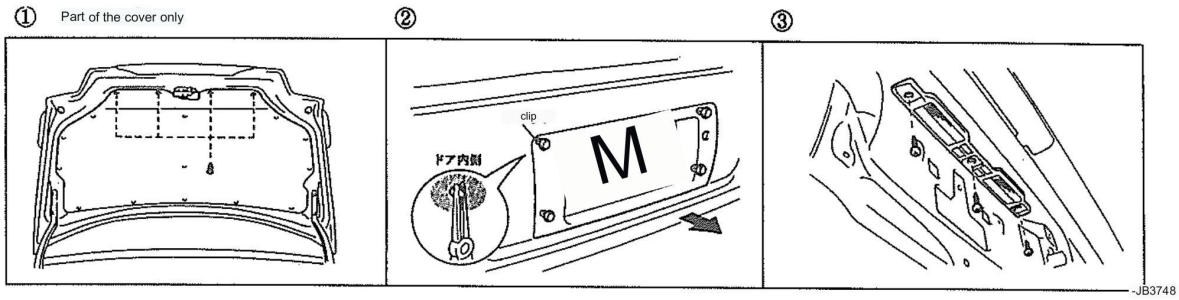
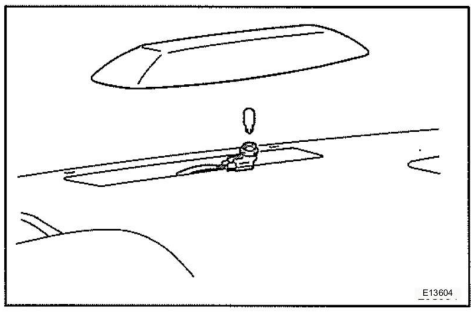
License plate lamp ASSY removal



T0049808

Center stop lamp ASSY

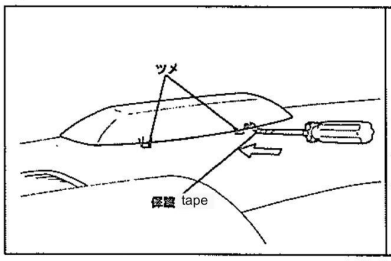


valve replacement

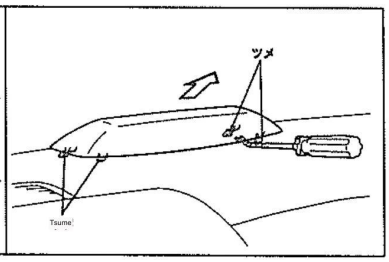
〈参考〉 Replace the bulb after removing the lamp assembly. Center stop lamp ASSY removal

valve type

0-1



0-2



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LED type

(Refer to "Body" - "Rear spoiler")

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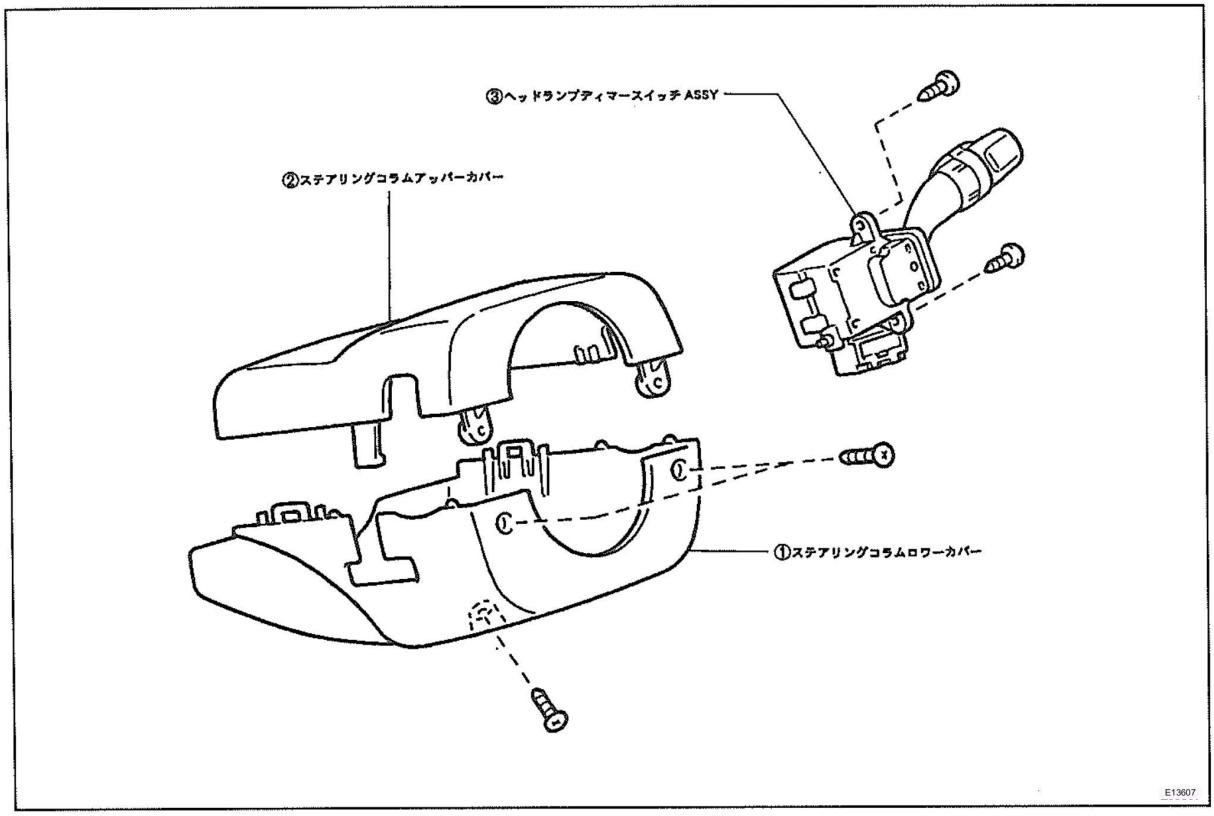
70043000

へッ $5So line 1F ASSY

Delivery configuration diagram



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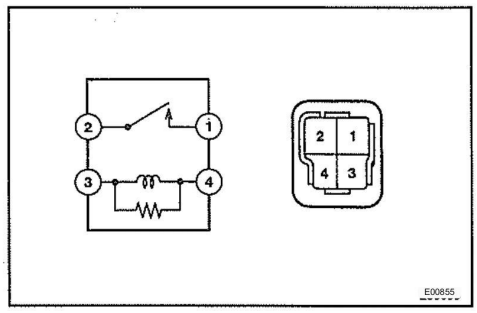
T0048001



Individual inspection

headlamp relay

1 Continuity check

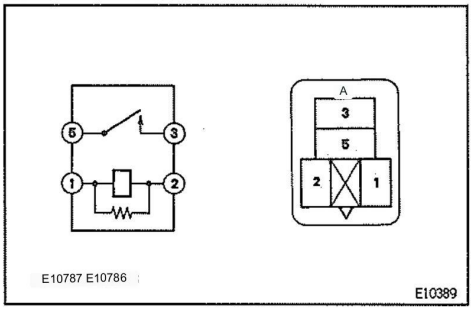
(1) Check continuity between each terminal of the connector.

Standard between 1 terminal and 2 terminals... No continuity

Between 3 terminals and 4 terminals...with conductor

(2) When applying battery voltage between terminals 3 and 4 of the connector, check continuity between terminals 1 and 2.

基 準 導通 Yes



Tail lamp relay, fog lamp relay

1 Continuity check

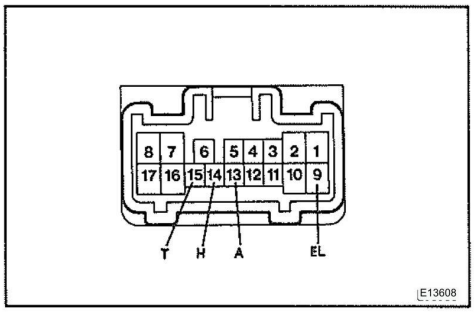
(1) Check continuity between each terminal of the connector. Standard

between 1 terminal and 2 terminals...Continuity exists

Between 3 terminals and 5 terminals...No

thin (2) When battery voltage is applied between 1 and 2 terminals of the connector, Check continuity between terminals 3 and 5. With

基 準 guidance



light control switch

1 Continuity check

(1) Check the conductivity between each terminal of the connector.

Excluding with conlight

standard ○○ guidance available

switching \ ID / Terminal name	9 EL	15 T	14 H
OFF			
TAIL	○	○	
HEAD	○	○	○

JB1037

With con light

standard ○○ Continuity available

name switching \ ID / Terminal	9 EL	15 T	14 H	13 A
OFF				
TAIL	○	○		
HEAD	○	○	○	
AUTO	○			○

JB0980

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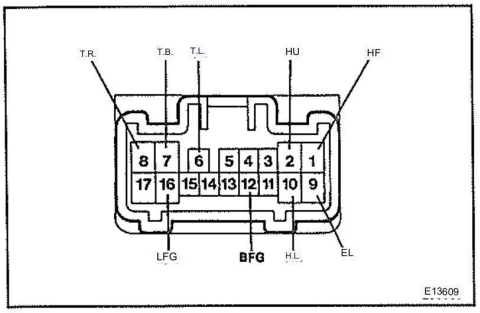


fog lamp switch

1 Continuity check

(1) Check continuity between terminals 12 (BFG) → 16 (LFG) of the connector.

standard Fog lamp switch ON... Continuity

OFF... No continuity

headlamp dimmer switch

1 Continuity check

(1) Each connector terminal Check continuity.

基 準 ○○ guidance available

switching \ ID	9	2	10	1
Terminal name	EL	HU	H.L.	HF
FLASH	○	○		○
LOW BEAM	○		○	
HI BEAM	○	○		

JB1038

turn signal switch

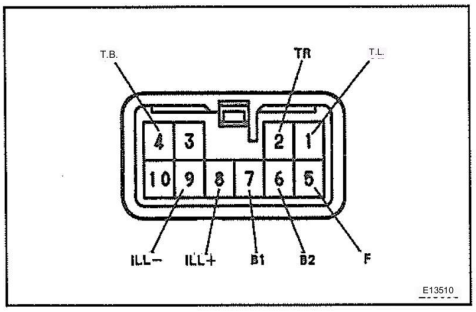
1 Continuity check

(1) Check continuity of each connector terminal.

standard ○ ○ available

switching \ ID	7	8	6
Terminal name	T.B.	T.R.	T.L.
right	○	○	
neutral			
left	○		○

JB0982



Hazard warning signal switch

1 Continuity and light bulb inspection

(1) Check the continuity between each terminal of the connector and the light bulb.

standard With ○○ conductor With valve

switching \ ID	7	6	5	1	2	4	3	8	9
OFF	○		○						
ON		○	○	○	○	○	○	○	○

JE0880

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turn signal flasher

1 Production assistance inspection

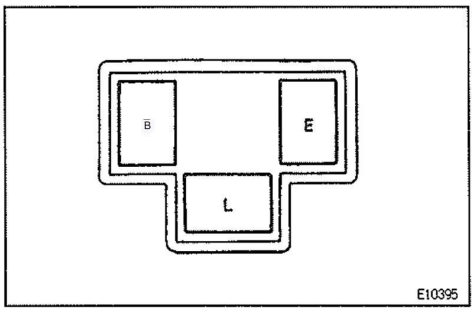
(1) There is continuity between the E terminal of the vehicle side connector and the body ground.

Check.

(2) Create a sub-wire harness and connect the R/B side connector and

Connect the chassis side.

(3) Measure the voltage between each terminal and body ground in the state of (2).

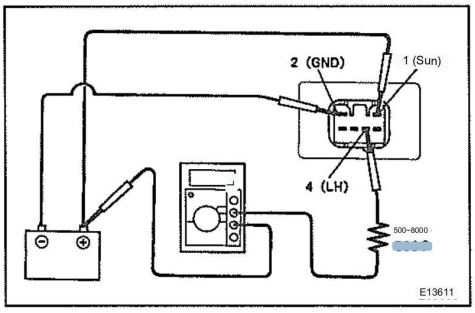


standard law

terminal		Measuring conditions	
input	B	Hazard SW OFF ON	OV 9V ELE
		Ignition SW OFF→ON	OVV or higher
output	–	Ignition SW ON, turn signal 0→09V or more	
		LSW (right or left) OFF-ON	60~120 times/
		Hazard SW OFF→ON	repeat in minutes

JA4613

headlamp leveling switch



1 Current check

(1) Measure the current value at each switch position.

Standards

switch position	Current (A)
0	8.0
1	7.2
2	6,39
3	5.59
4	4.78
5	3.98

Neutral start switch ("Automatic (A/T car)

transmission" - "Basic inspection and adjustment"

-Refer to "Neutral start switch inspection and adjustment")

Stop lamp switch

(Refer to "Brake" - "Anti-lock brake system" — "Individual inspection")

Backup lamp switch (M/T car)

1 Continuity check

(1) When pushing the ball in, check that there is continuity between the

connector terminals.

grab box lamp switch

1 Continuity check

(1) Check that there is no continuity between the connector terminals when

the shaft is pushed

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courtesy lamp switch

front door, rear door

1 Continuity check

(1) Confirm that there is no continuity between the connector terminal and the bracket when the shaft is pushed in.

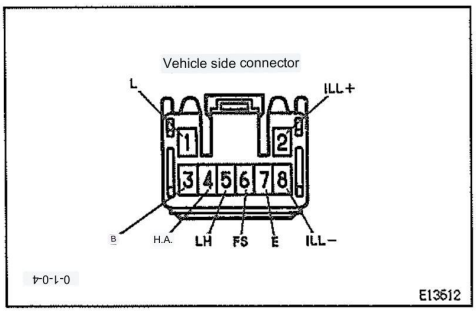
back door

1 Continuity check

(1) Between the connector terminals when the back door lock is operated Check continuity.

Standard lock state...No continuity

· Released state...with guidance



rear fog light switch

1 Rear fog light switch inspection

(1) Check continuity voltage between each terminal and body ground according to the following inspection order and instructions. In the table, "disconnected vehicle side" indicates that the connector is disconnected and the inspection is performed using the connector on the vehicle side, and "connector connected" indicates that the inspection is performed with the connector connected.

lid brush

order	Measurement connector conditions	ID	Child名	item	inspection conditions	基 Ao	Problem location in case of non-standard
1	Connection disconnected vehicle side	7	E	Normal time		With guidance	車両側
2		8	ILL−	Normal time		With guidance	
3		1	L	Thin normal time		導通 can be	
4		3	B	Coronary pressure constant		10～14V	
5		4	HR voltage always			10～14V	
6		2LL+		Voltage Light Control Switch OFF TAIL or HEAD		0V→10～14V	
7		6	F.S.	導	Front fog lamp switch OFF→ON	Without thinness → with continuity	
8		5	LH continuity		Light control switch OFF HEAD	Without thin → with guide	
9	connector connection				(1) Rear fog lamp switch ON (2) Light control switch OFF HEAD or light control switch OFF TAIL and front fog lamp switch ON	Rear fog lamp lights up	switch

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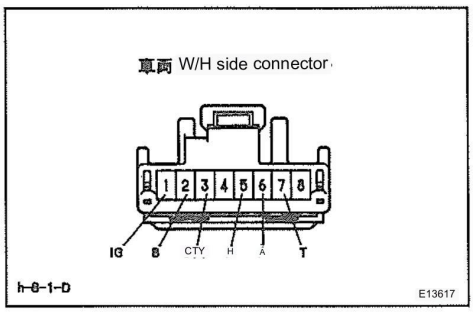

Conlight Scanner

1 Conlight scanner inspection

(1) Remove the combination meter ASSY. (2)

Disconnect the connector of the Conlight Scanner.

(3) Connect the 5(H) terminal or 7(T) terminal of the vehicle side W/H connector to the

Check the lighting status of the lamp when the device is earthed.

standard 5 Connect terminal to body ground...Headlamp lights up

7 terminal is connected to body ground...Tail lamp lights up (4)

Check the voltage between each terminal and body ground according to the following inspection order and instructions. In the table, “disconnected vehicle side” indicates that the connector is disconnected and inspected with the connector on the vehicle side, and “connected connector” indicates that the inspection is performed with the connector connected.

standard

order	Measurement connector conditions	Terminal number	Terminal name	item	point tree article subject	standard	Problem location in case of non-standard
1	Connection disconnected vehicle side	6	A	導通	Light control S/W AUTO	導通 can be	車両側
2		2	B	Voltage always		10～14V	
3		1	I.G.	Voltage	IG switch OFF ON	0V→10～14V	
4		7	T	Kansho	Light control S/W TAIL or HEAD OFF or AUTO	0V→10～14V	
5		5	H	voltage	Light control S/W HEAD Other than HEAD	0V→10～14V	
6		3	CTY	Voltage	Driver's door closed open	9V That's all→0V	
7	connector connection				(1) IG switch ON (2) Light control S/W AUTO (3) Gradually cover the top of the scanner with something that does not allow light to pass through.	Turn on the small head lamps in order.	scanner

JB0881

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T0049263

wiper & washer

preparation Goods

tool

	09060-20030	clip remover	For clip removal

SST

	09814-22010	Rear wiper pivot shaft lock nut wrench	Removing and installing nuts and washer packings

instrument

	09082-00012	toyota electrical tester	For each part point school
	(09083-00060)	mini test lead	For connector inspection

Oils and fats Others

wire brush	11701	For cleaning wiper pivot serrations
soldering iron, solder	54201	Rear wiper relay removal and removal

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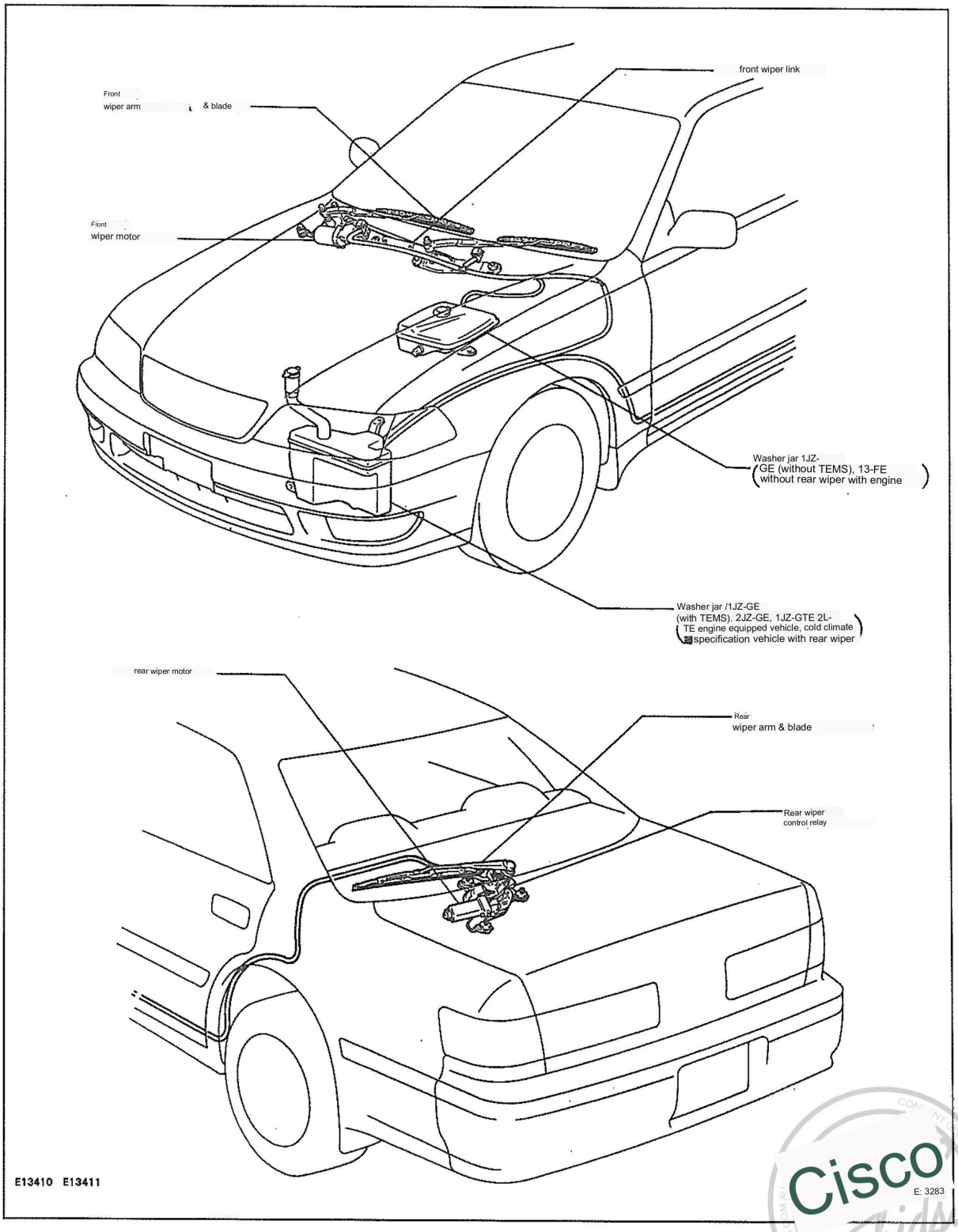
T0049284

Parts layout diagram



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steamed noodles
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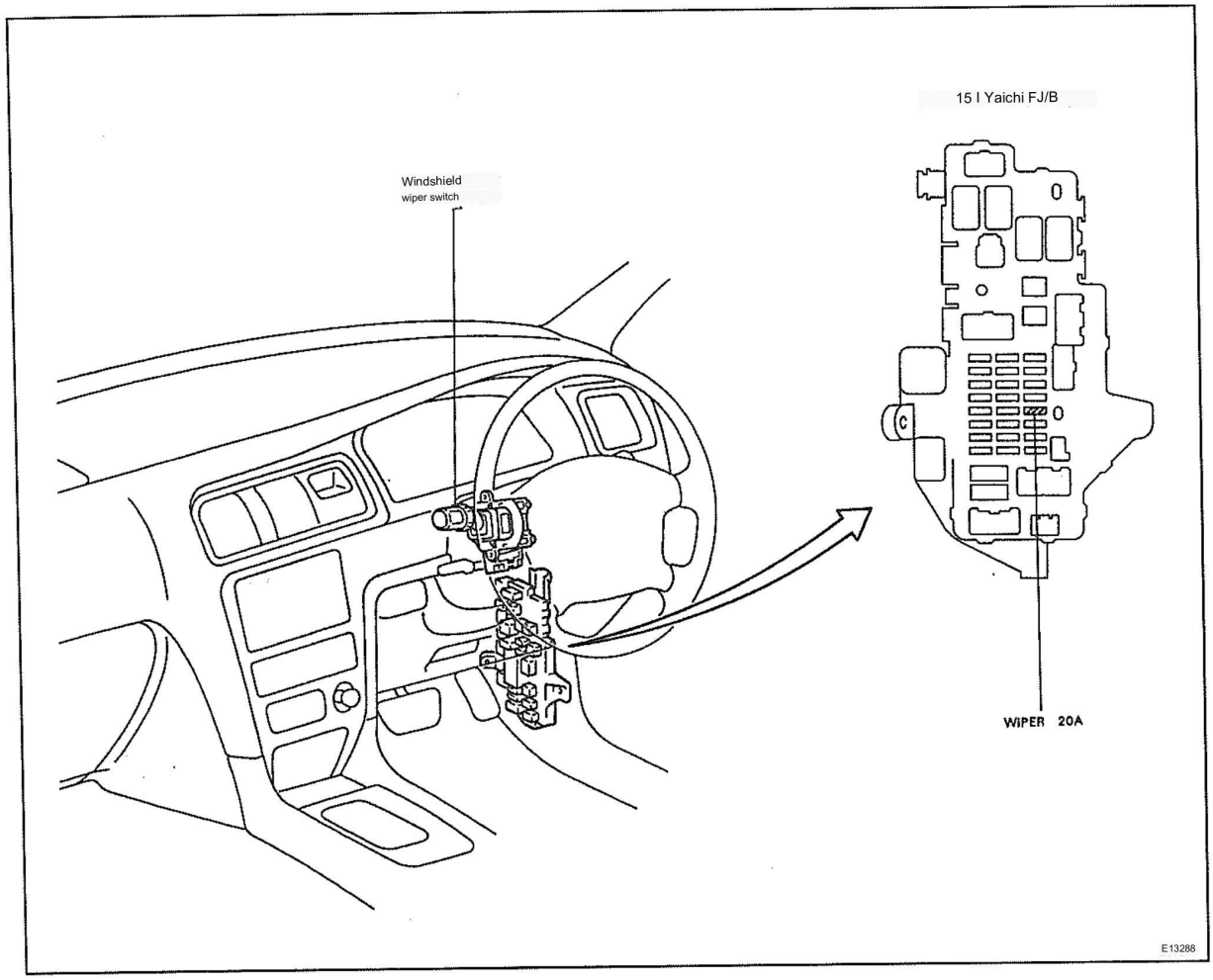

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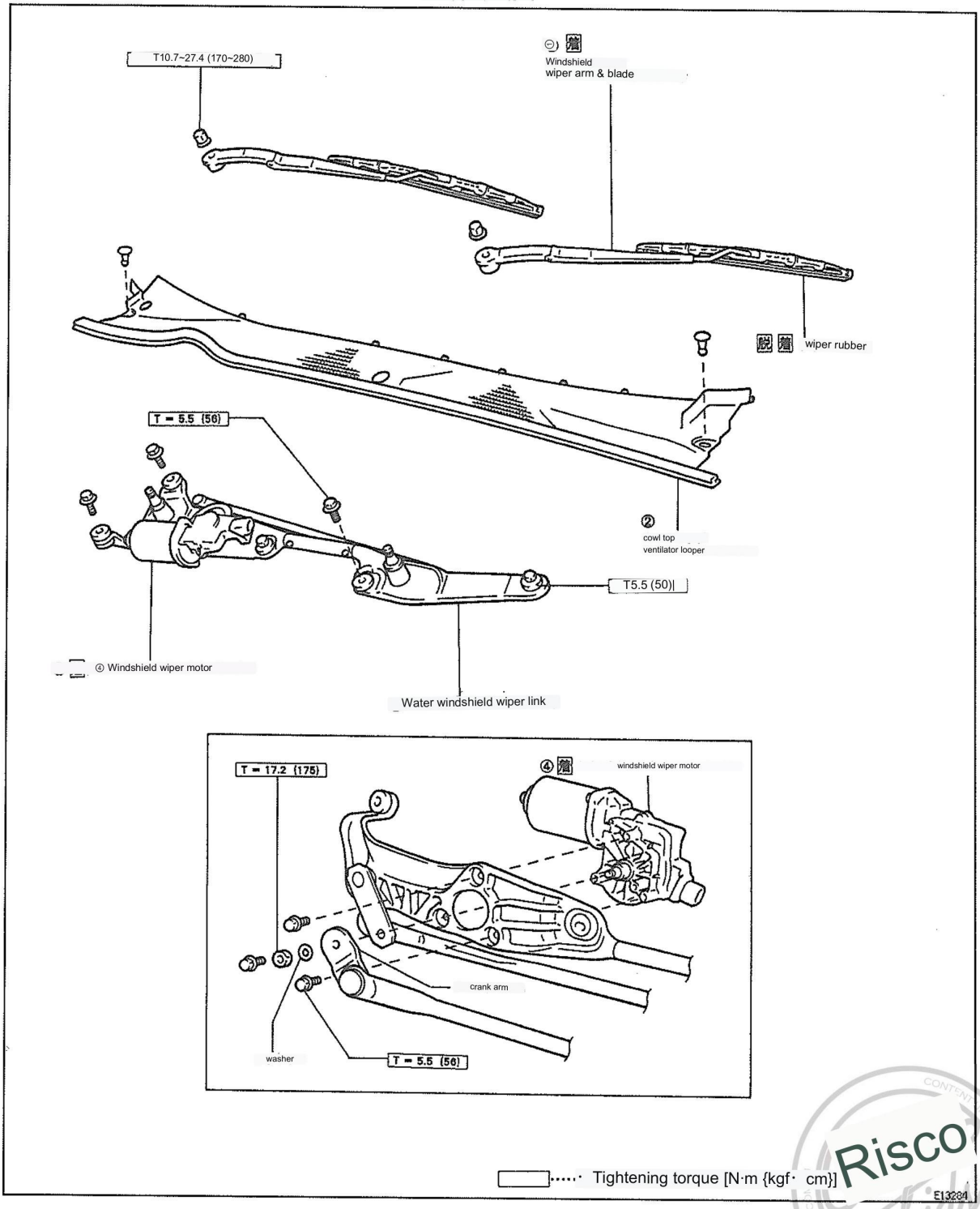
T0048255

front wiper

wiper motor & Link

Diagram of removal of straw



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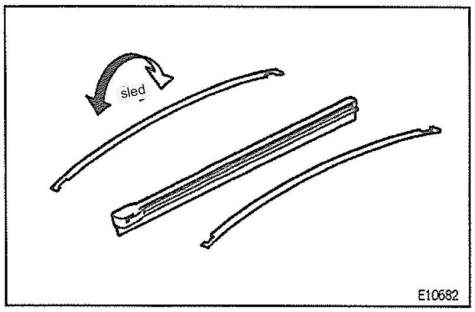


Points to note when replacing wiper rubber

1 wiper rubber replacement

(1) To replace the wiper rubber, remove the blade from the arm.

(2) Do not tilt the arm with the blade removed.

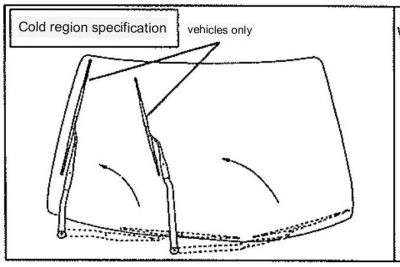
(3) Pay attention to the front and back of the backing.

(4) Install the rubber head (the side with the bulge) so that it faces the arm shaft side.

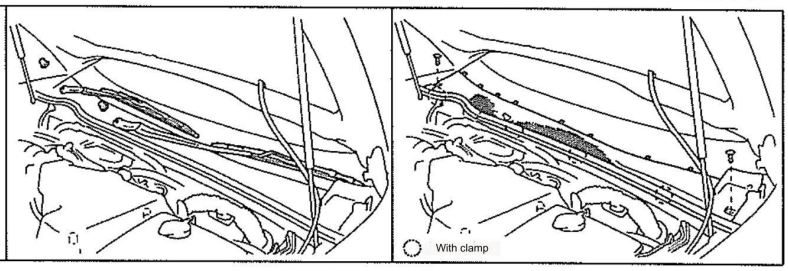
wear.

wiper motor & Link removal

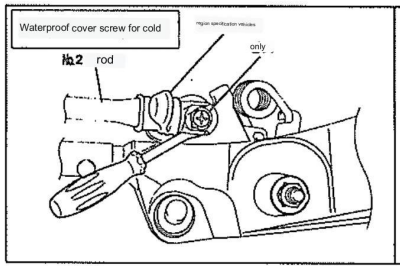
① Wiper arm & blade removal



② Removing the cowl top ventilator looper

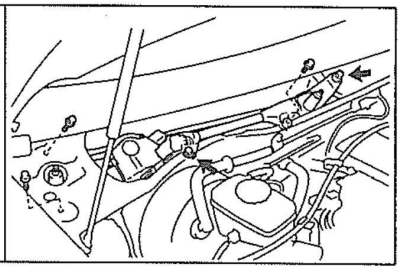


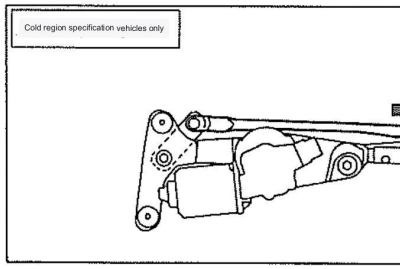
③ Motor & link removal



(1) No.2 rod waterproof cover (P seat side shaft holder side) and remove the screw.

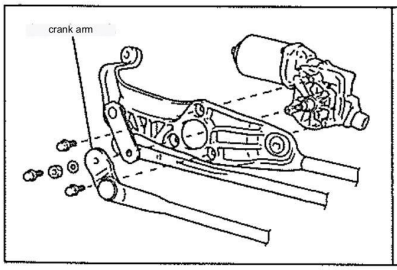
(2) Use a clip remover to separate No. 2 rod.





Push the No. 2 rod in the direction of the arrow (→) as shown in the diagram and remove it from the shaft holder on the P seat side. CAUTION Be careful not to scratch the glass.

④ Wiper motor removal



(1) Remove the nut and remove the crank from the motor. disconnect the link arm.

(2) Remove the three bolts and remove the motor. Zusu.

When the motor of a cold region specification vehicle is not moving

No.2 It is possible to remove the motor & link assembly without disconnecting the rod, but the glass and cowl will be easily scratched, so use protective tape to prevent scratches.

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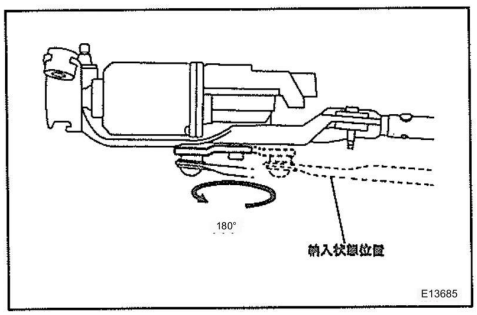


Wiper motor & link installation work

Points to note

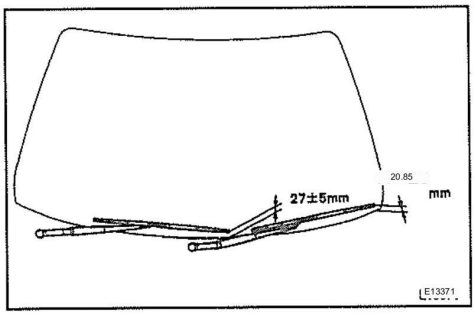
1 Wiper motor & link · (cold region specification vehicle, when replacing a new motor)

(1) Motor & Link ASSY motor part crank arm Rotate 180° to flip the link upside down. (2) Separate No.2 rod.

(Refer to "Wiper motor & link removal")

(3) Assemble it into the cowl in the state of (2), and assemble with 4 bolts.

(4) Assemble the No.2 rod with screws and attach the waterproof cover.



2 Installing the windshield wiper arm

(1) Operate the wiper motor and bring it to the automatic stop position.

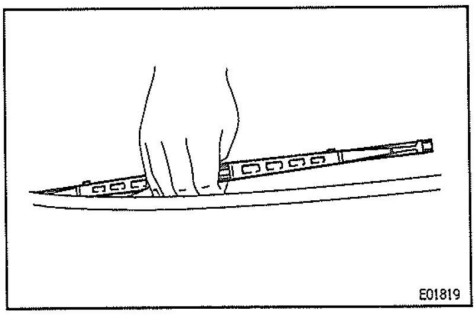
(2) If there is foreign matter (shavings from aluminum die-casting) attached to the serrations of the wiper pivot, clean it with a wire brush, etc.

(3) Set the wiper arm so that the blade tip is in the position shown in the illustration and tighten the nut.

注意 There are left and right identification marks on the wiper arm (driver's side: D, passenger's side: P), so you can't mistake them.

(4) Operate the wiper while spraying water or washer fluid on the glass. and check the wiping condition of the blade.

注意 The blade does not interfere with the biller or louver.

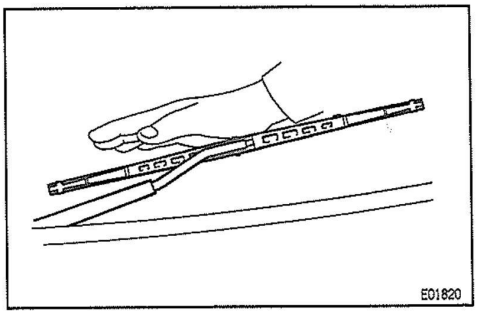


Wiper stop position switching method

(Semiconductor. Vehicle with full control switching mechanism)

1 Fully Concealed Semi-Concealed

(1) Hold the wiper arm at the attachment point of the wiper arm and blade and pull it up (load up to 10kg).



2 Semiconshield Fullconshield

(1) Press the wiper arm and blade attachment part with your palm.

16

salutation

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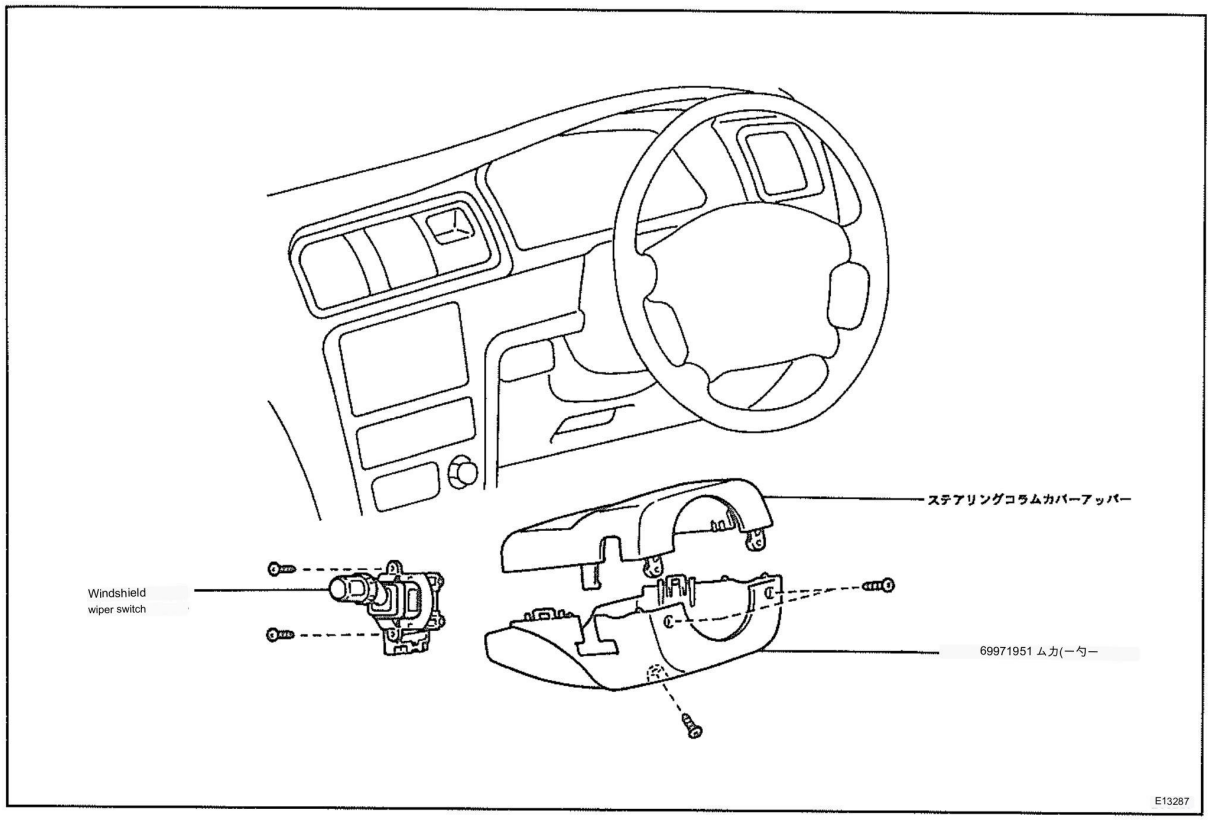
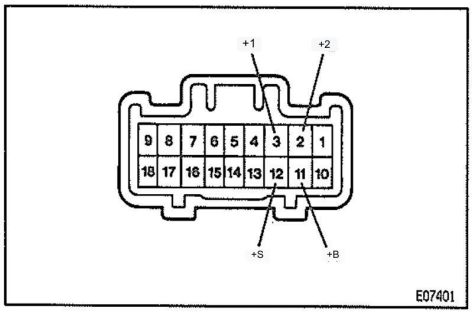
TC048ZS6

windshield wiper switch

Detachment configuration diagram





7C048287

Individual inspection

windshield wiper switch

1 Continuity check

(1) Continuity point between each terminal.

基 準 ○○Mizo Street

ID / Terminal name / switching	11 +B	3 +1	2 +2	12 +S
OFF		○		-O
INT		○		O
L.O.	○	○		
HI	○		○	

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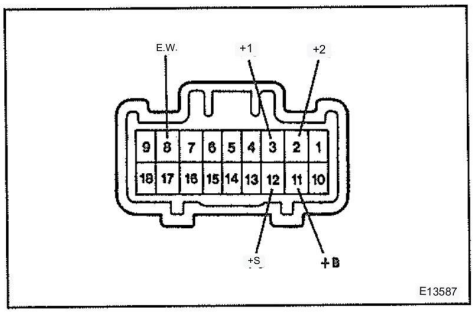


2 Intermittent operation check

(1) Connect the + terminal of the tester to the 3 (+1) terminal of the connector, and the 8 (EW) terminal of the tester.

Connect the tester terminals.

(2) Battery +, 8 (EW) terminal and 12 to terminal 11 (+B) of the connector

Connect the battery to the (+S)

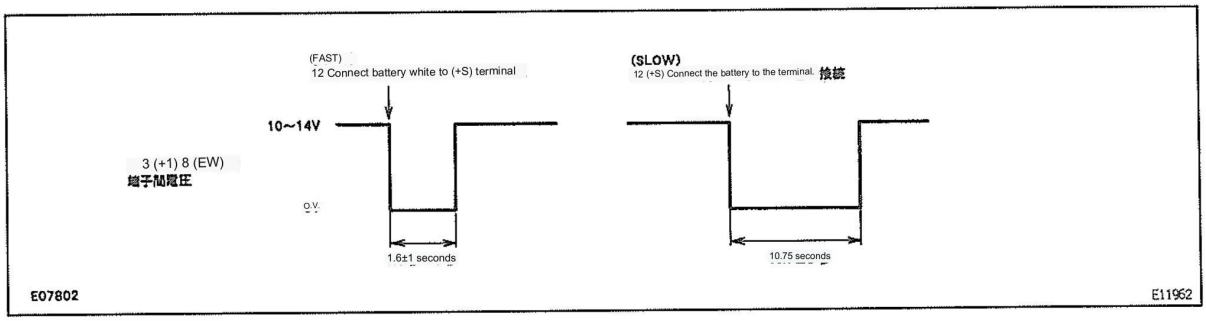
terminal. (3) Set the wiper switch to INT.

(4) Connect the 12(+S) terminal of the connector to the battery for 5 seconds.

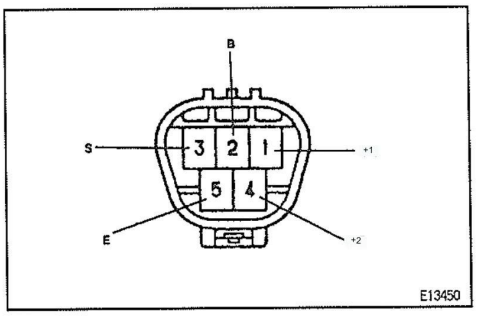
(5) When the 12 (+S) terminal of the connector is connected to the battery and the intermittent wiper relay is activated, the voltage between the 3 (+1) and 8 (EW) terminals is

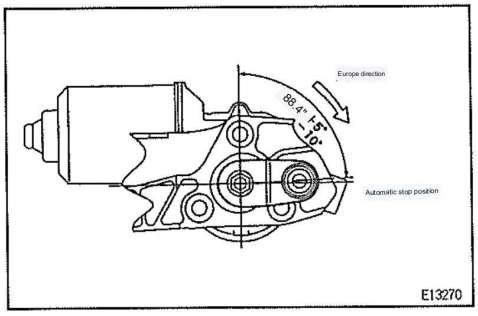
Check for voltage changes.

standard It will look like the diagram



Windshield wiper motor ASSY





1 Lo operation check

(1) Make sure that the motor operates at low speed (Lo) when the battery is connected to the 1 (+1) terminal of the connector and the battery is connected to the 4, 5 (E) terminal of the connector.

Inspect. Hi

2 Operation check

(1) Make sure that the motor operates at high speed (Hi) when a battery is connected to the 4(+2) terminal and the battery is connected to the 5(E) terminal of the connector.

Inspect.

3 Automatic stop position design inspection

(1) Connect the battery to the 1 (+1) terminal of the connector and the battery to the 5 (E) terminal of the connector, and rotate the motor at low speed (Lo).

(2) Disconnect the 1(+1) terminal during operation in (1) to stop the wiper motor in operation.

(3) Short-circuit the 1 (+1) and 3 (S) terminals of the connector, and check that when the battery is connected to the 2 (B) terminal, the motor operates again at low speed (Lo) and stops at the automatic stop position. do.

Standards shown in the diagram

CONT

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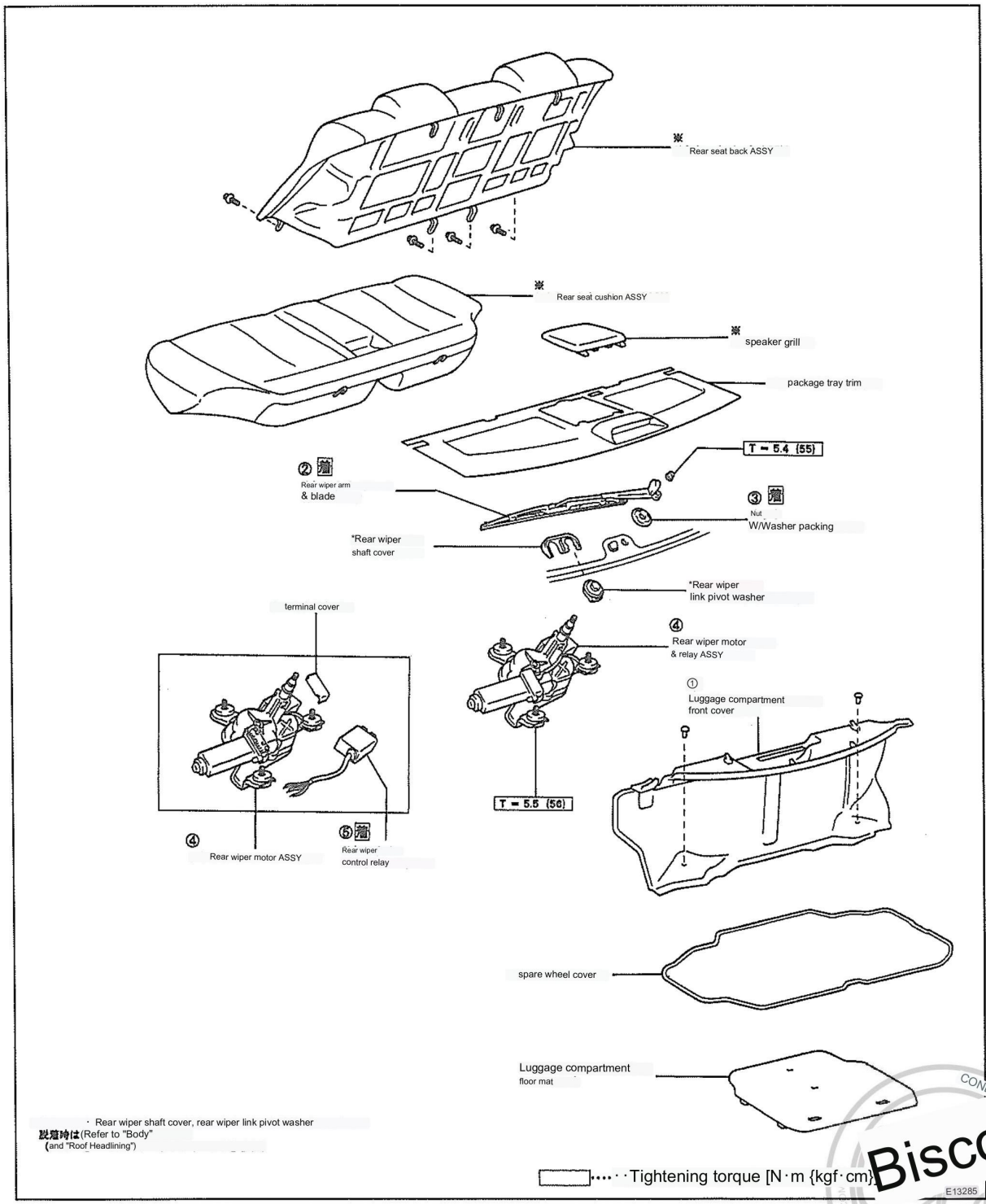
T0048288

rear wiper

rear wiper motor

Disassembled configuration diagram



・ Rear wiper shaft cover, rear wiper link pivot washer

脱着時は(Refer to "Body" (and "Roof Headlining")

□ ・・・・Tightening torque [N・m {kgf・cm}]

E13285

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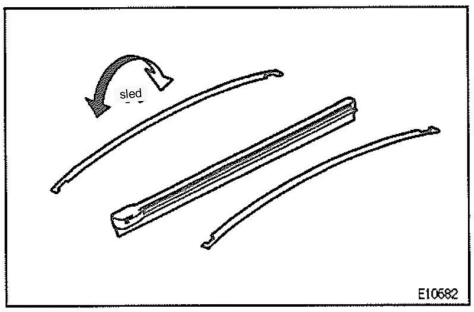


Points to note when replacing wiper rubber

1 Wiper rubber replacement

(1) To replace the wiper rubber, remove the blade from the arm.

conduct.

(2) Do not tilt the arm with the blade removed.

(3) Pay attention to the front and back of the backing.

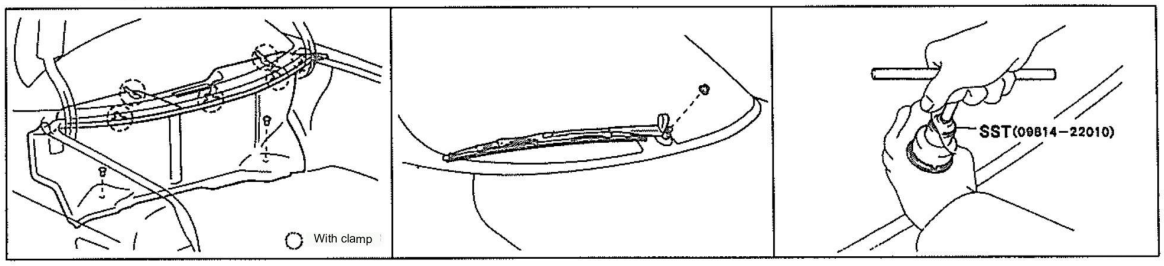
(4) Install so that the rubber head (the side with the bulge) faces toward the arm shaft.

Rear wiper motor & Rear wiper control relay removal

① Removing the luggage compartment front cover

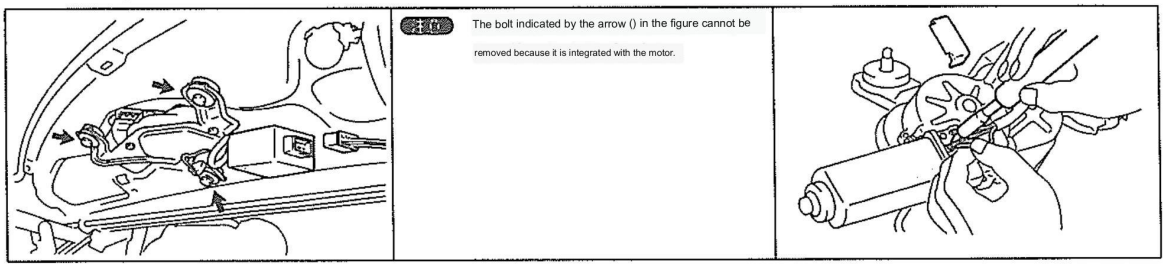
② Rear wiper arm & blade removal

③ Nut W/Washer packing removal



④ Rear wiper motor & relay ASSY removal

(Fus) Rear wiper control relay removal



The bolt indicated by the arrow () in the figure cannot be removed because it is integrated with the motor.

(1) Remove the terminal cover. (2) Use a soldering iron to melt the solder on the terminal and disconnect the three wire harnesses.

Vinegar.

Do not overheat the soldering iron and melt the harness and terminal.

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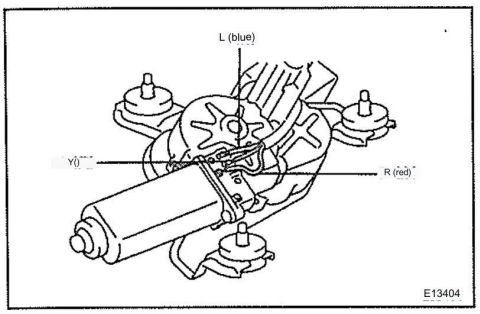


Rear wiper motor & Rear wiper control relay

Points to note during installation work

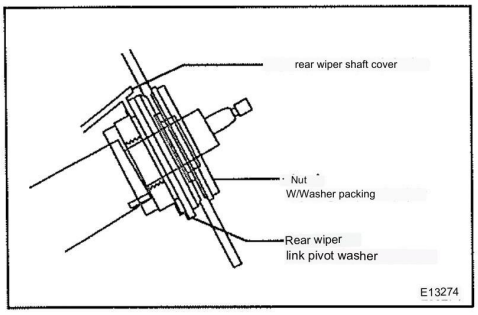
1 Installing the rear wiper control relay

(1) Using solder and a soldering iron, connect the three wire harnesses of the relay.

Install the motor in the position shown in the illustration.

(Note) · Do not overheat the solder and melt the harness and terminal.

· Do not apply more solder than necessary.



2 Nut W/Washer & Packing installation

(1) Using SST, install the nut W/washer & pad as shown in the figure.

Attach the kin.

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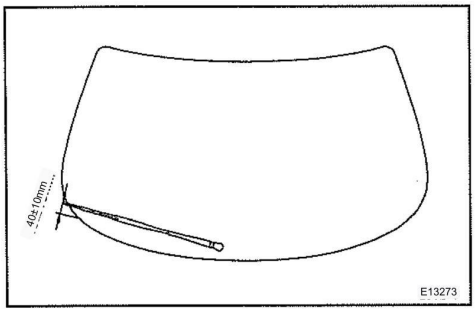

3 Rear wiper arm & blade installation

(1) Operate the wiper motor and stop it at the automatic stop position.

(2) If there is foreign matter (aluminum die-casting powder) attached to the serrations of the wiper pivot, clean it with a wire brush, etc.

(3) Set the wiper arm so that the blade tip is in the position shown in the illustration and tighten the set nut.

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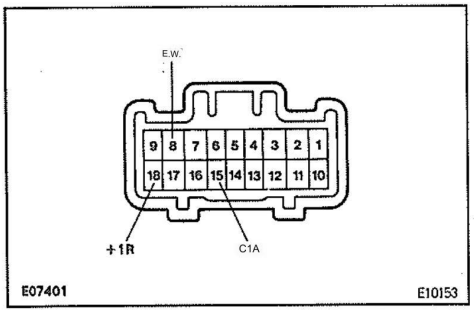


Individual inspection

windshield wiper switch

(Rear wiper switch)

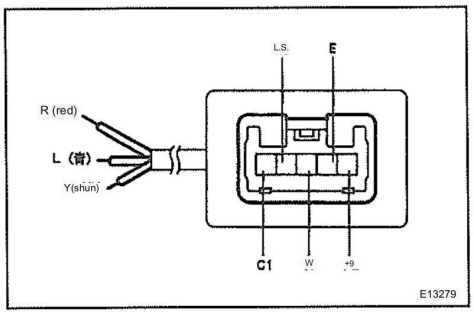
1 Continuity check

(1) Check continuity between each terminal of the switch connector.

基 准 ○○ guidance available

switching \ ID / Terminal name	8 E.W.	15 CIR	18 +IR
OFF			
INT	○	○	
ON	○		○

JB0984



Rear wiper control relay

注意 L, Y, R indicate green.

<Reference> L... Blue, Y.... Yellow, R... Red ;

1 OFF inspection

(1) Check continuity between each terminal of the relay. Reference

between L terminal and R terminal ····· No introduction

Between Y terminal ⇔ R terminal· ····· With guidance

2 Check when ON

(1) Check the voltage and continuity between each relay terminal when the battery is connected to the +B terminal and the battery to the LS terminal.

Reference R terminal Ls Between terminals... Approx. 12V

Y terminal No continuity between R terminals

3 Intermittent operation check

(1) Set the tester to the DC-V range and connect the tester's + to the R terminal and the tester's to the C1 terminal.

(2) Connect the battery to the +B terminal, and the battery to the C1 ⊖ and E terminals.

(Relay ON state) Between

reference R terminal C1 terminal...Approx. 12V

(3) In the state of (2), short-circuit the Y terminal and L terminal for about 5 seconds.

(The relay is in ON → OFF state) (4) When

the short circuit between Y terminal and L terminal is disconnected, between R terminal and C1 terminal

Check for voltage changes.

Reference: DV when disconnecting the short circuit, then approximately 12V NTENT after return to

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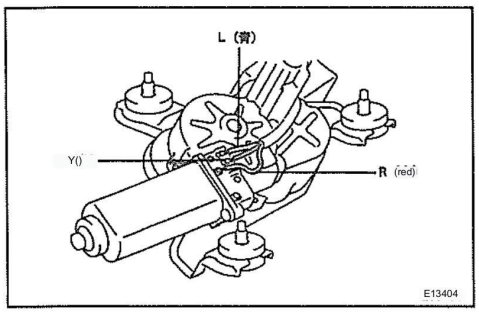


rear wiper motor

1 ON inspection

(1) Disconnect the R terminal.

(2) Connect the battery to the R terminal and the battery to the motor body ground, and check that the motor operates.

2 OFF inspection

(1) Battery to R terminal, battery to motor body ground section

⊖ Connect and operate the motor.

(2) Disconnect the R terminal during operation of (1), and make it stop.

(3) When the R terminal and Y terminal are connected and the battery is connected to the L terminal,

Check that the motor operates again and stops at the automatic stop position.

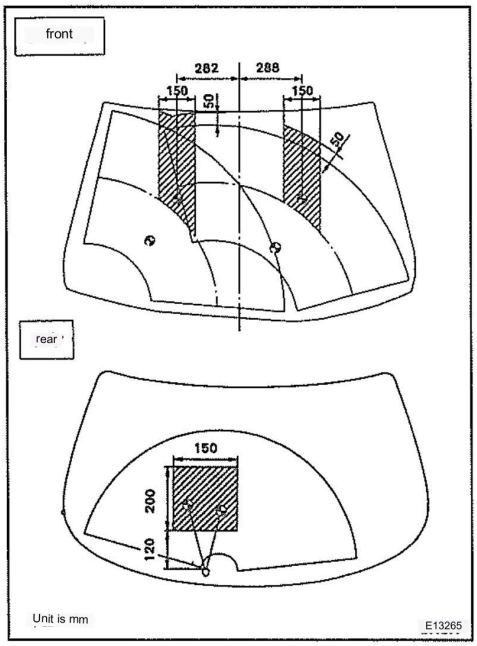
do.

注意 L, Y, R indicate line color.

<Reference> L...Blue

Y……黄

R……赤



washer

T0046200

washer nozzle

1 Adjusting the washer fluid injection position (1) Check the landing position of the washer fluid with the engine started.

Criteria Must be within the range shown in the diagram.

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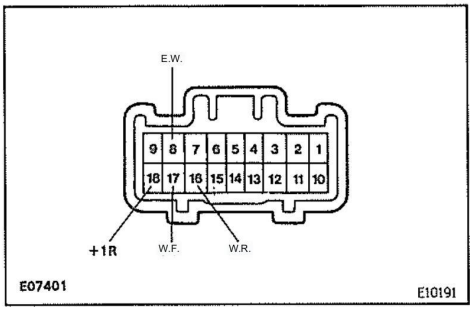
T0049291



Individual inspection

windshield wiper switch

(Washer switch)

1 Continuity check

(1) Check continuity between each terminal of the switch connector.

standard

front

○○ guidance available

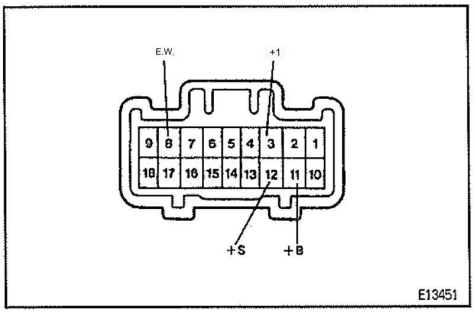
ID / Terminal name / switching	17 W.F.	8 E.W.
OFF		
ON	○	○

rear

○○ Continuity available

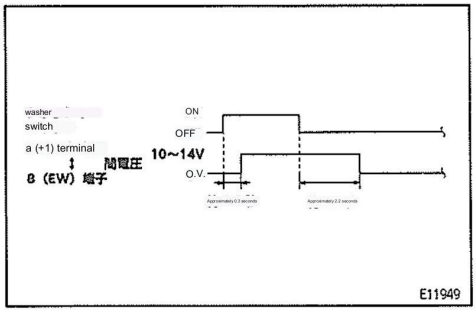
ID / Terminal name / switching	8 E.W.	16 W.R.	18 +1R
ON (OFF 側)	○	○	
OFF			
ON (ON 側)	○	○	○

JE0985



2 Washer switch operation check (front) (1) Turn off the wiper switch. (2) Connect the battery to the 11(+B) terminal of the connector +, 12(+S) terminal and 8 (EW) Connect the battery to the terminal.

(3) Connect the tester's ④ terminal to the 3 (+1) terminal of the connector, and the tester's terminal to the 8 (EW) terminal.



(4) Check the voltage between the 3(+1) and 8(EW) terminals when the washer switch is turned on and off. Standard: As shown in the diagram.

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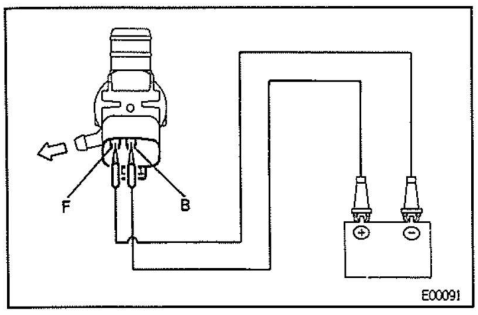


washer motor

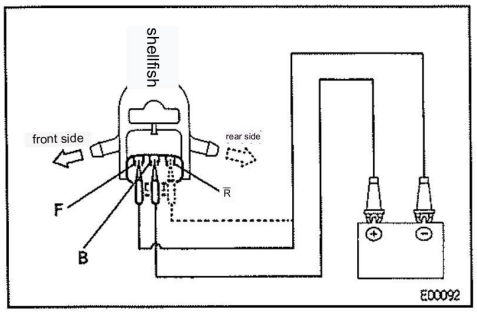
1 Operation check

No rear wiper

(1) With the washer motor attached to the washer tank, fill the washer tank with water.

(2) Connect the battery to the B terminal and the F terminal of the motor.

Make sure that water is pumped when the unit is connected.



With rear wiper

(1) With the washer motor attached to the washer tank, fill the washer tank with water.

(2) When the battery is connected to the B terminal of the motor and the battery to the F terminal, confirm that water is forced to the front side.

(3) When the battery is connected to the B terminal of the motor and the battery to the R terminal, confirm that water is forced to the rear side.

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T00491B5

First evening & Ning Issa

Preparation items

instrument

	09082-00012	toyota electrical tester	Each part is for use as a pointer.
	(09083-00060)	32×下刂-F	One point for both mouth and evening
temperature meter		21701	For within temperature measurement
tachometer		21801	Yuguchi ×It's just one piece

Oils and fats Others

dropper	53003	7V一Gyu Yusai for one item
oscilloscope	2050:	For waveform measurement

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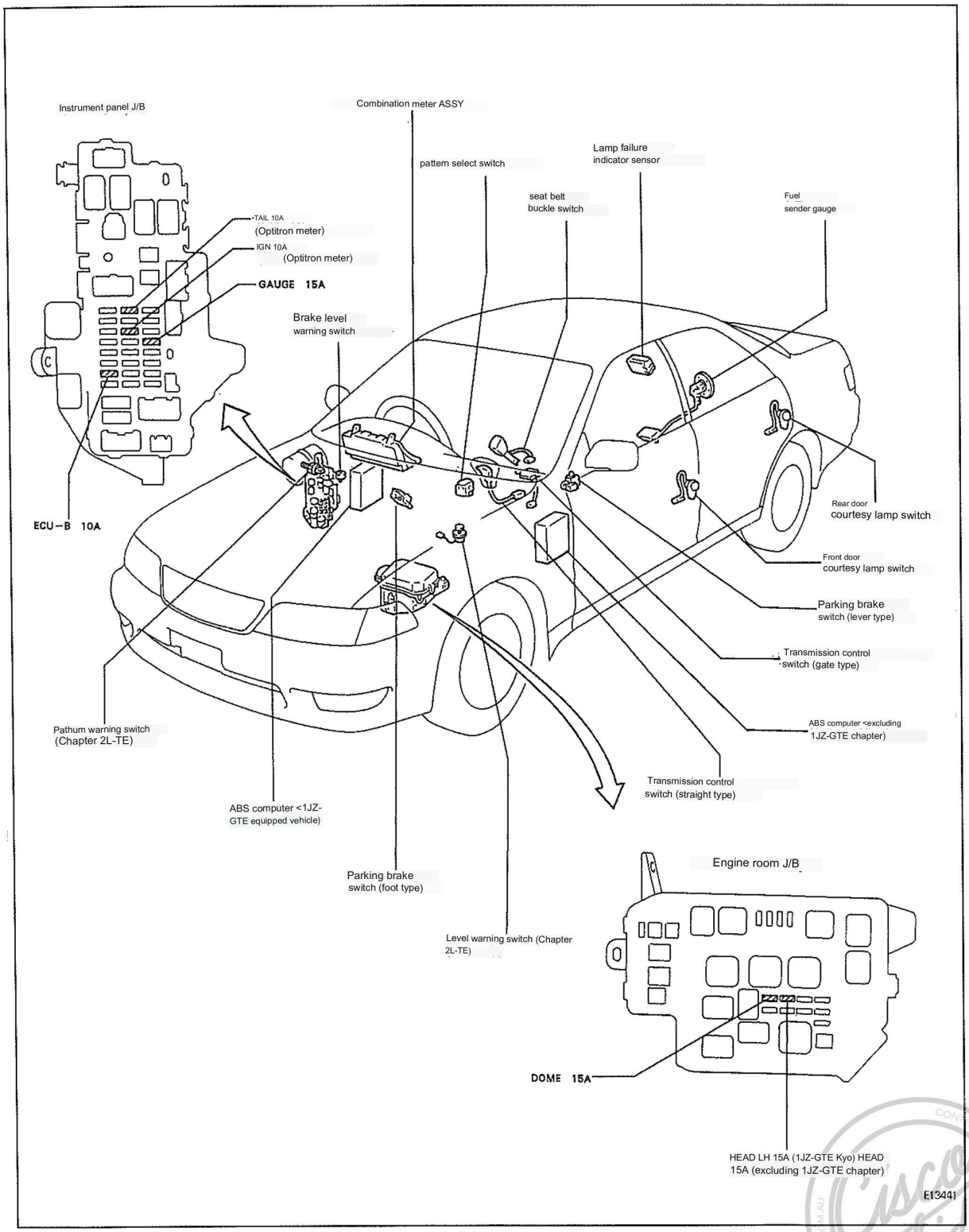
T0040186

Parts layout diagram



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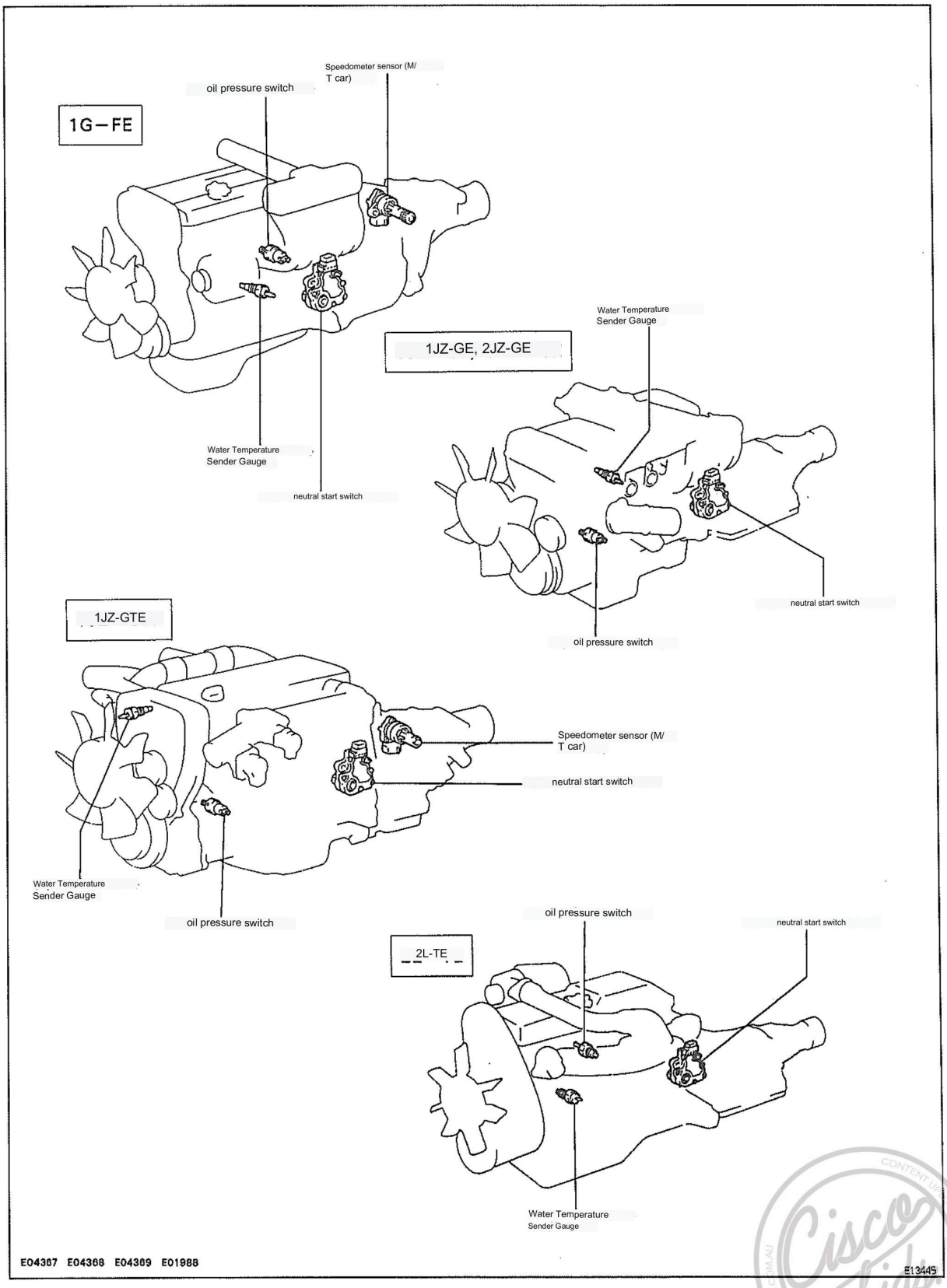

box Conveyance
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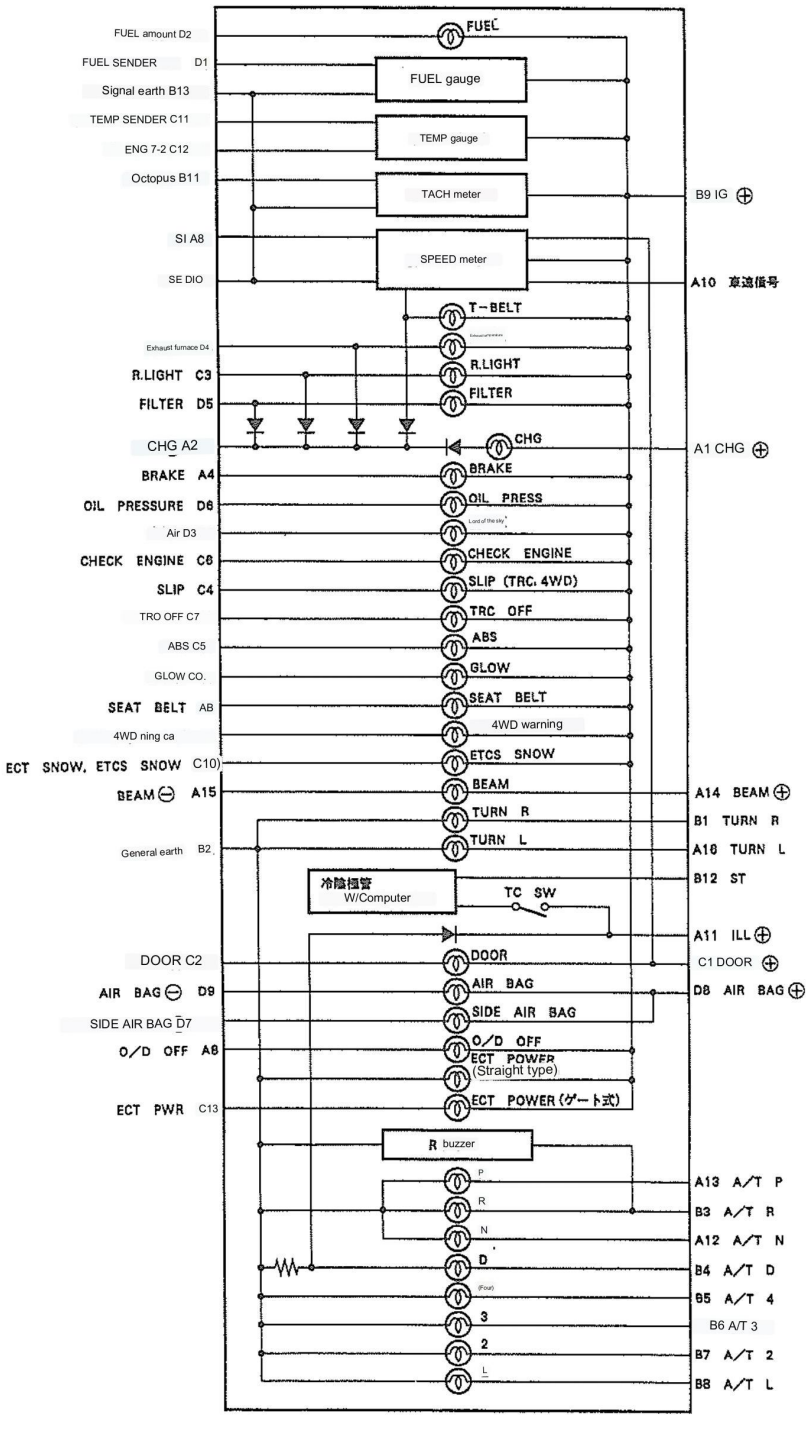
YG049187

Optitron meter

Internal circuit diagram



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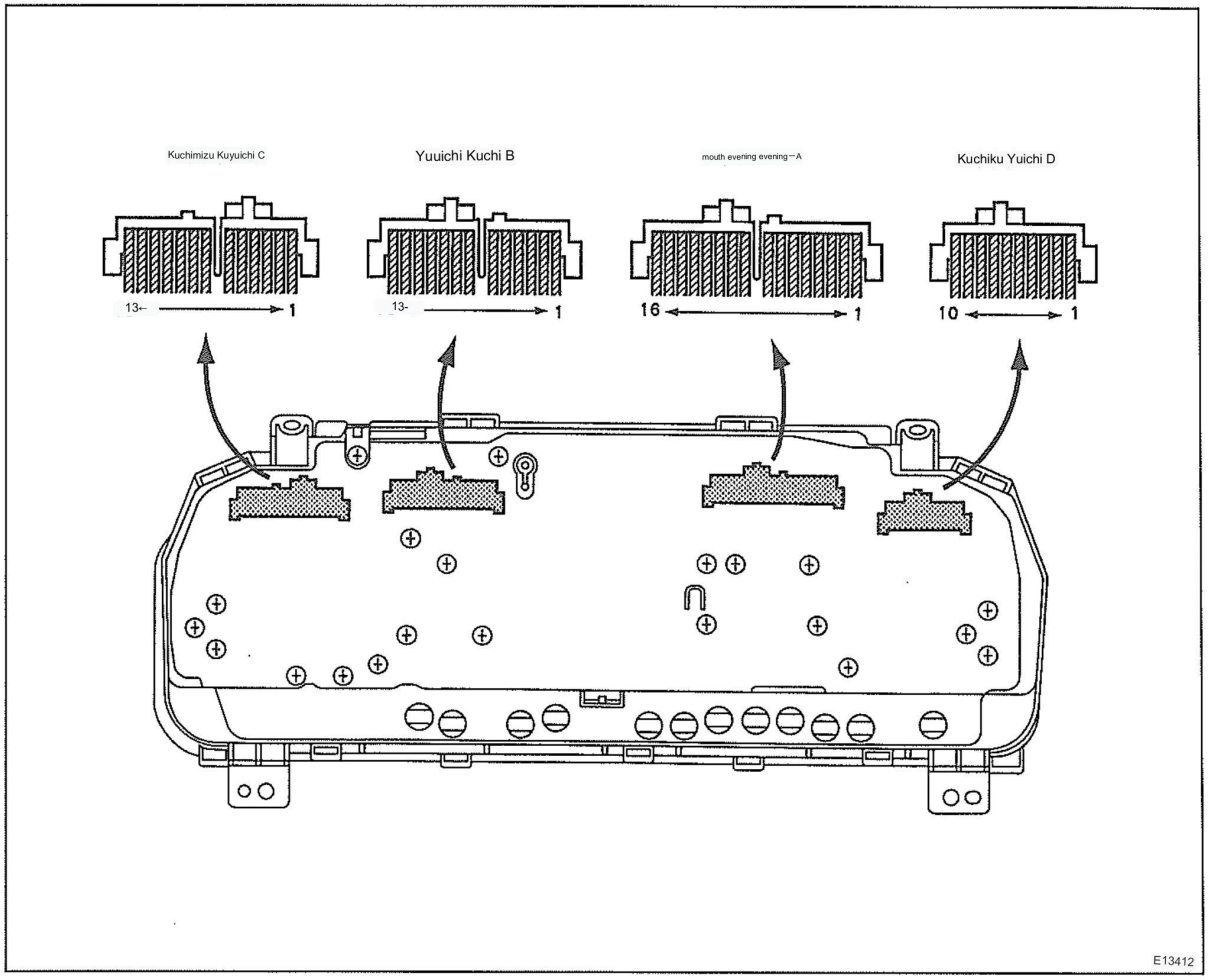

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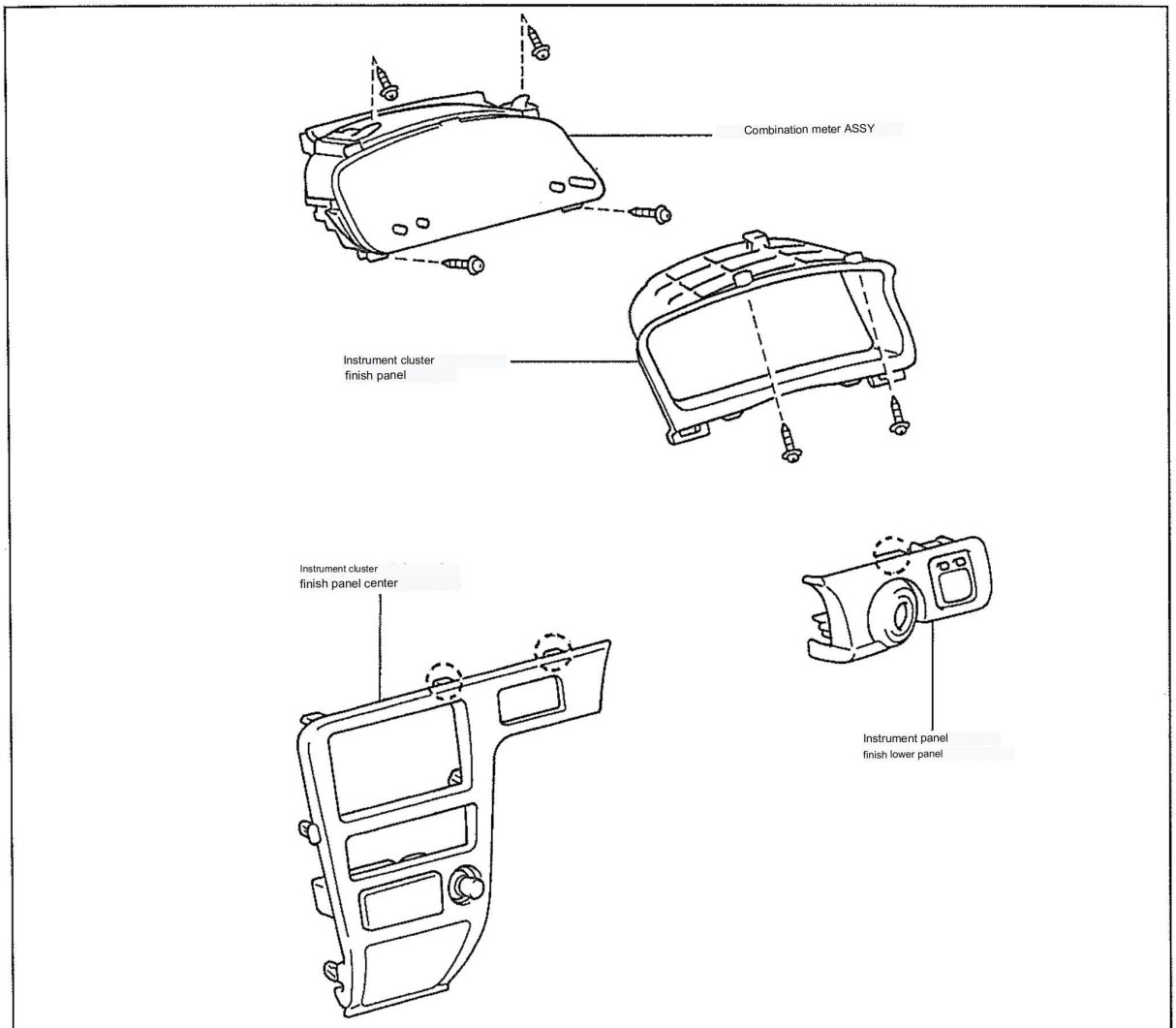
T0049148

Combination meter ASSY

Detachment configuration diagram



- To remove the instrument cluster finish panel, lift the part marked with ○, unmate it, and remove it.

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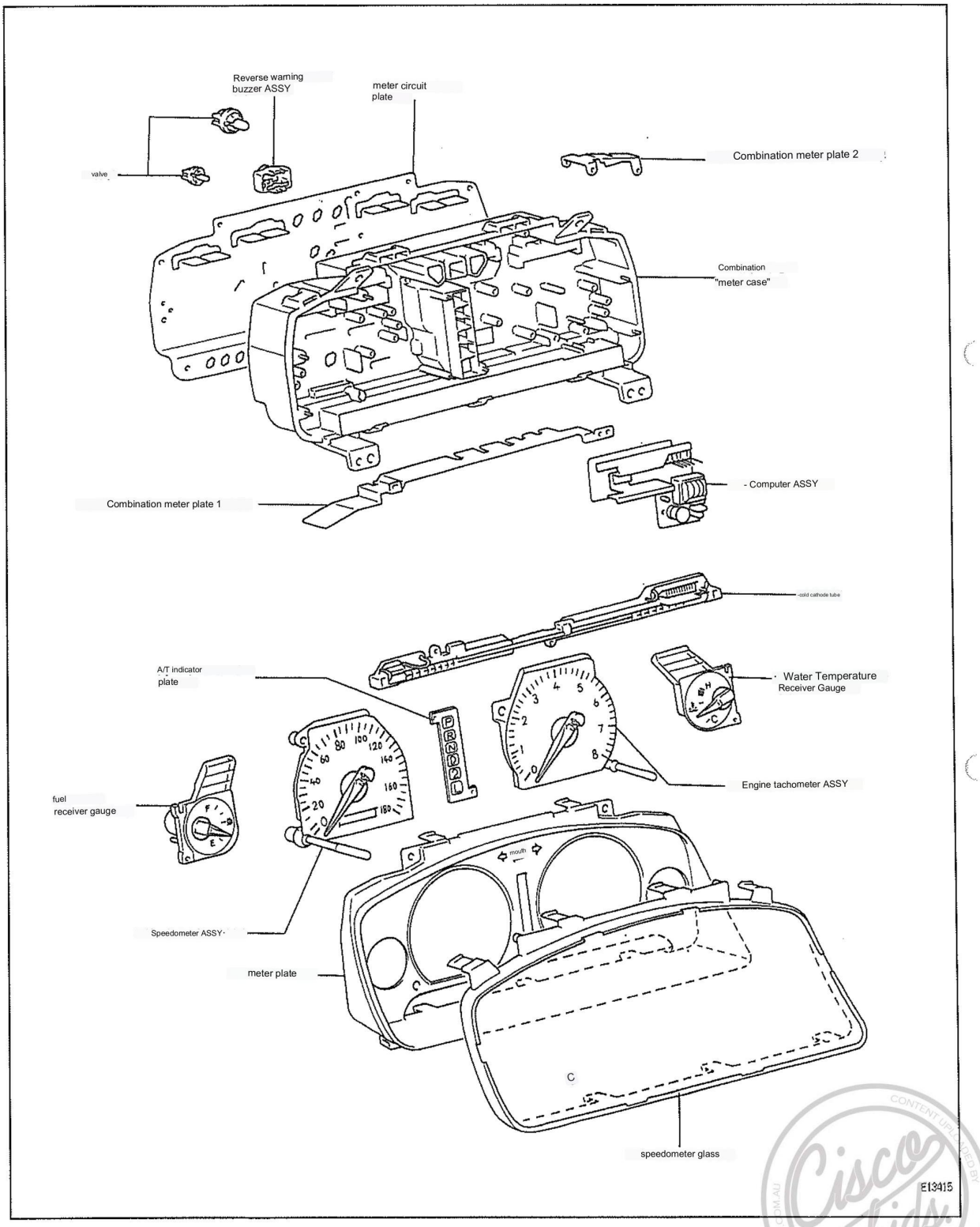
Exploded configuration diagram



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troubleshooting

Pre-inspection

(1) Since the defects may overlap, the malfunctions reported by users

In addition to checking if there are any other problems, be sure to check the following order.

Check the following items.

① Fuse related

② Wire harness related

⑤ Valve related

Inspection using charts by trouble phenomenon

1 Inspection based on failure status

(1) Select the chart to use for troubleshooting based on the failure status.

and proceed with troubleshooting.

2 How to read the flowchart

•...Items to be worked

on ...Items to be inspected

· · · · · · Failure factor

*· · · Items to be inspected with the connector connected

*· · · · · · Items to be inspected individually

注意 • When you turn the ignition switch to START, all

The meter stops working, but this is not a malfunction.

· When replacing the combination meter computer,

Be careful not to touch the IC part with your clothes or body.· If you

disconnect the battery terminal while the engine is running, a reverse current will flow.

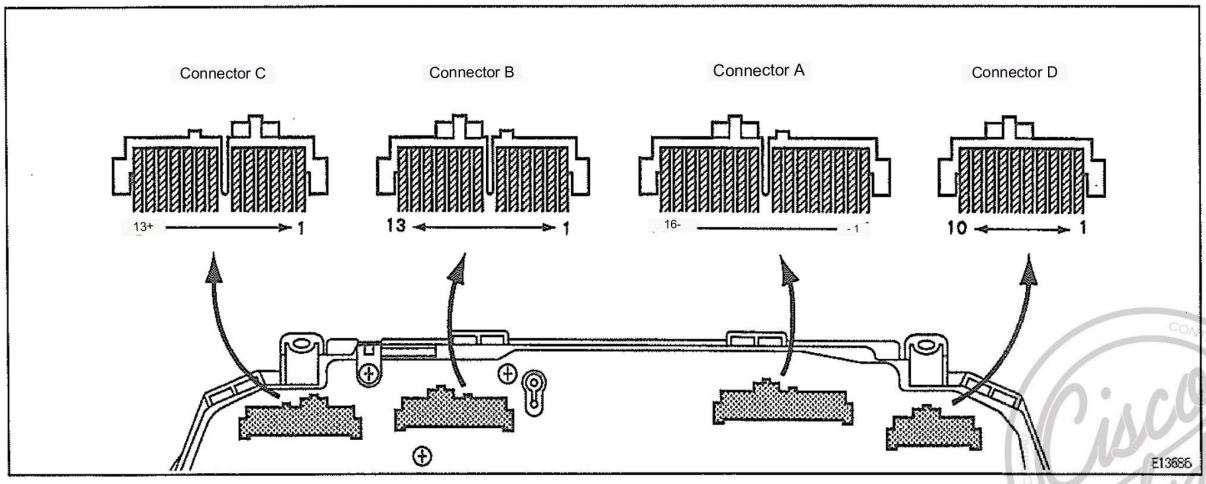
It may cause trouble.

· When disconnecting connectors or terminals, be sure to remove the battery.

Disconnect the terminal.

·· Cold cathode tubes and meter computers are connected to several thousand volts.

Be careful not to get an electric shock as current voltage is applied.



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Troubleshooting by problem phenomenon

(Reference) Inspect in numerical order.

Malfunction phenomenon / point location, order		combination meter	Vehicle speed signal (Note 1)	Fuel sender gauge	Temparacha Sender Gauge	W/H connector	・Others ・*See flowchart
All	doesn't work at all	3 meters overall				2	・1 Fuse Chart [ ]
	Character plate, pointer does not light up	13 cold cathode tube 4 meter con pewter				2	・1 Fuse ・*Chart [2]
	Character plates and needles become dark in cold weather	1 cold cathode tube 2 meter computer					※chart [3]
	Meter dimming S/W OFF, light does not dim even if light control S/W is turned ON General	2 circuit plate 3 meter computer				1	※chart [4]
	Turn off the light control S/W and keep てもthe light dimmed.	2 circuit plate 3 meter computer				1	※chart[]
	When the starter is running, the character plate and pointer do not turn off.	2 circuit plates 3 meter con pewter				1	*Chart [6]
S1 ピ Me ド Inimg ー ー	Even when driving, the speedometer continues to display "0km/h"	3 speedometer	4			5	1 Commercially available accessories (navigation, etc.) that use vehicle speed signals 2 Ground float
	The speedometer reading changes frequently or changes significantly.	3 speedometer	4			5	1 Commercially available accessories that use vehicle speed signals (navigation, etc.) 2 Earth float
	Speedometer display error is large	3 speedometer	4			5	1 Commercially available accessories (navigation, etc.) that use vehicle speed signals 2 Earth floating
talent de ・ ト ッ P Mail ー タ	ODO/TRIP is not displayed at all	speedometer replacement					
	ODO / TRIP Bullshit display (display of numbers that are not numbers)	speedometer replacement					
	Neither ODO nor TRIP	3 speedometer	4			5	1 Commercially available accessories (navigation, etc.) that use vehicle speed signals 2 Earth floating
	Do not accumulate only TRIP	1ODO/TRIP S/W 2 Speedometer					
	TRIP meter cannot be reset	10DO / TRIP S/W 2 speedometer					
	"ODO", "TRIP A", "TRIP B" 0 Display cannot be switched	1ODO/TRIP S/W 12 speedometer					
	TRIP A1ODO/TRIP S/W B data is reset every time the IG switch is turned on.	13 speedometer				2	
	ODO meter displays "999999km/h" T	speedometer replacement					
	ODO or TRIP accumulated distance error is large	3 speedometer	4			5	1 Commercially available accessories (navigation, etc.) that use vehicle speed signals 2 Earth floating

(Note 1) Vehicle speed signal... ① M/T vehicle: Output from meter speed sensor
② A/T vehicle: Output from ABS ECU

16

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Malfunction phenomenon \ Inspection area, order		combination meter	signal (Note 1)	Fuel temperature WH Vehicle speed Sender gauge	Sender gauge	Connect タ一	others
tachometer	Tachometer engine speed is 0rpm As shown ⋮	4 tachometer				3	1 Igniter 2 Commercially available accessories that use engine rotation signals (turbo timer, etc.)
	Tachometer reading fluctuates	4 tachometer				3	1 Igniter 2 Commercially available accessories that use engine rotation signals (turbo timer, etc.)
fuel receiver gauge	Fehr Gauge Indication High (+ Display) / 2 Fehr Receiver Low indication (one display)	Bar Gauge		1		3	
	When the fuel gauge is full, no full tank display	4 Fuel Sea Bar Gauge		2		3	1 Refuel with IG ON
	Fuel gauge indication is erratic	3 Fuel recipe...Bar gauge		1		2	
	Fuel warning lamp does not light up	1 valve 2 circuit plate		3		4	
Water Temperature Receiver Gauge	Water Temperature Gauge Indication High 3 Water Temperature Indication Low (+Display)/Indication Low (-Display)	ratcha receiver gauge			1	2	
	The water temperature gauge reading is fluctuating.The water	3Water Temperature Receiver Gauge			1	2	
	temperature gauge shows the lowest water temperature. Fixed in position/Fixed in overheat position	3Water Temperature Receiver Gauge			1	2	
Indicator warning etc.	Specific indicators/warnings are displayed (including diagnosis code input)						1 Applicable ECU
	Certain indicators/warnings remain lit	2 circuit plates				3	1 Applicable ECU or switch
	1 valve with specific indicators/warnings not light	3 circuit plates				4	2Applicable ECU or switch
	Rear light, charge, exhaust temperature T-belt, filter warning on engine Does not go off even when	1 circuit plate				3	2 alternator
	rotating Reverse buzzer does not sound (A/T R lights up)	1 Reverse buzzer 2 Circuit plate					
	Reverse buzzer always sounds	Reverse buzzer replacement					

If the output from the meter is estimated to be abnormal during inspection of the system that uses the vehicle speed signal from the meter

Malfunction phenomenon \ Inspection area, order	combination meter	Vehicle speed signal (Note 1)	fuel sender Game Gauge	Temparacha Sender Tar	W/H Connect	others
Vehicle speed signal (4P) output error (Does not display diagnostics) (Does not lock) etc.	4 speedometer	5			6	1 Commercially available accessories that use vehicle speed signals (navigation, etc.) 2 ECU that uses vehicle speed 3 signals Earth

(Note 1) Vehicle speed signal... ① M/T vehicle: Output from meter speed sensor
② A/T vehicle: Output from ABS ECU

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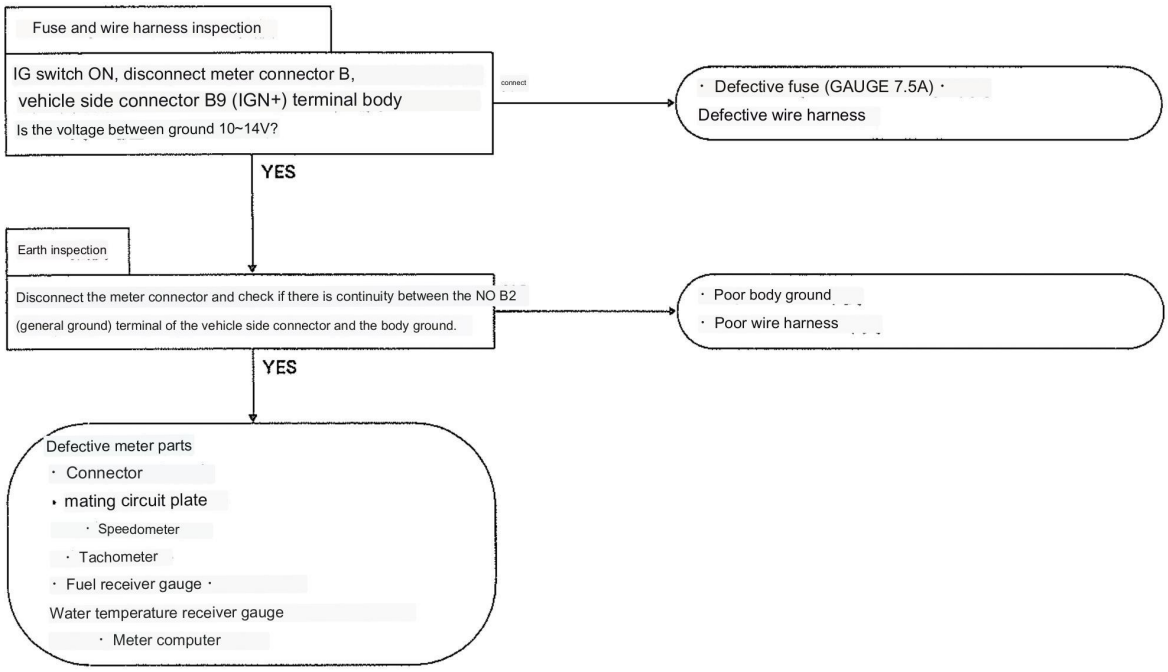
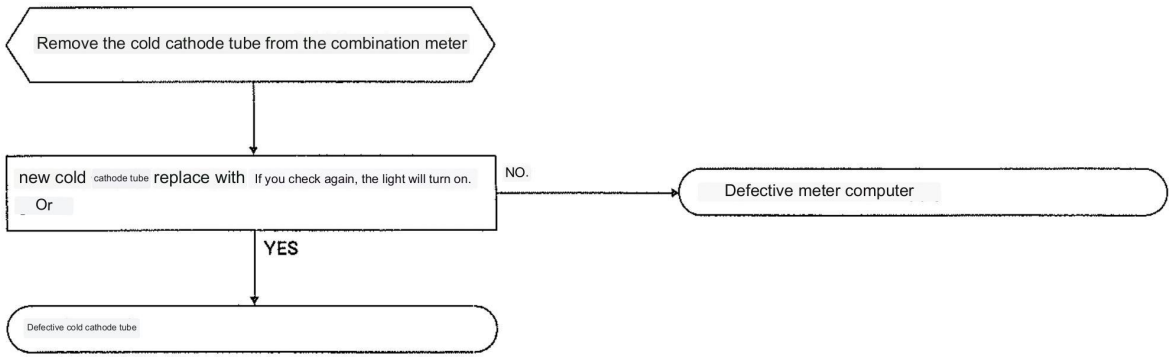
1 doesn't work at all



2 Character plate, pointer does not light up (other functions are normal)



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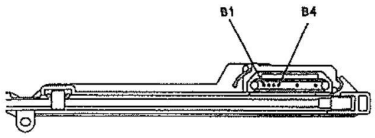
3 When cold, the character plate and pointer remain dark even after turning on the IG switch.

Remove the cold cathode tube from the combination meter

Cold cathode tube continuity check

Cold cathode tube connector B1 (HEATER+) terminal B4 (HEATER-) Is there continuity between the terminals?



NO. → Defective cold cathode tube

YES → Defective meter computer

4 Meter dimmer switch OFF, meter illumination does not dim even if the light control switch is turned ON

Light control switch signal inspection

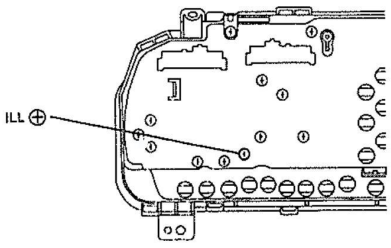
Light control switch ON, meter connector
Disconnect A and B, and check whether the voltage between the A11 (ILL⊕) end B2 ⏚ ↔ (general ground) terminal of the vehicle side connector is 10~14V.

NO → · Defective wire harness · Defective light control signal

YES

ILL terminal inspection

Is there continuity between the meter computer's ILL+ terminal (tightening screw) A11 (ILL⊕) terminals?
Also, is the ILL terminal short-circuited with other terminals?



NO. → Defective circuit plate

YES → Defective meter computer

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5 The light remains dim even when the light control switch is turned off.

Light control switch signal inspection

Light control switch OFF, meter connector
- Disconnect A and B and connect A11 (ILL+) to the vehicle side connector.

Is the voltage between terminal B2 (general ground) 1V or less?

NO. → · Defective wire harness · Light control switch signal failure

YES ↓

ILL terminal inspection

meter Computer ILL terminal (tightening screw) and other terminals are not shorted (see chart 4)

NO. → Defective circuit plate

YES ↓

Defective meter computer

6 When the starter is ON, the character plate and pointer do not turn off.

Starter ON signal check

When the starter is ON, disconnect meter connector B, Vehicle side connector B12 (ST) terminal B2 (general ground)

Is the voltage between the terminals 8~14V?

NO. → · Defective wire harness · Starter signal failure

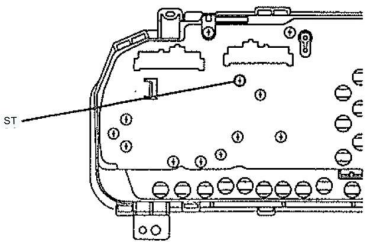
YES ↓

※

Circuit plate inspection

Meter computer ST terminal (tightening screw) ↔

Is there continuity between the B12(ST) terminals? Also, is the ST terminal shorted to other terminals?



NO. → Defective circuit plate

YES ↓

Defective meter computer

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TOC491BO

speedometer

Speedometer check

1 On-board inspection

(1) Using a speedometer tester, check the speedometer instructions

Check for errors and operation of totalizer.

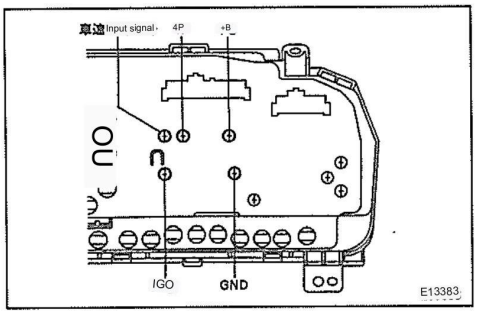
standards

Tester indication standard speed [km/h]	Meter reading tolerance range [km/h]
40	36~46
60	54~69
80	72~92
100	90-115
120	108~138
140	126~161
160	144~184

If the tire pressure is inappropriate, the indication error will increase.

(2) Check the deflection of the pointer.

Standard ☐ Pointer deflection width within 0.2km/h



2 Speedometer input/output signal check

(1) Connect the mini test lead to the Toyota electrical tester,

Measure between each terminal or between each terminal and

body ground. (2) Use an oscilloscope to confirm that pulses are generated.

Ru.

- The connector connects to the combination meter computer.

While connected, inspect from the back side of the connector.

When measuring voltage, make sure the tester is set to the voltage range.

Check after confirming that.

standard

Terminal name	input/output	tester connection	item	Measuring conditions	standard
GND	input	GND- body Earth	Continuity when		With continuity
+B	input	+B ↔ GND	電圧	常 時	10 ~ 14V
IG ⊕	input	IG+GND	電圧	IG switch OFF→ON	IV or less →10 ~ 14V
Vehicle speed input signal	input	車速 Input decoding GND	電圧	IG switch ON, vehicle running at 10km/h	1 Repeat Hi Lo of 7 times in seconds.
4P	output	4P ↔ GND	Waveform When driving approximately 20km/h		Waveform 1 See below

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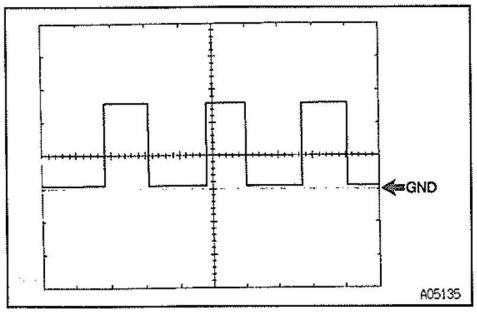

waveform 1

Measurement terminal 4P terminal GND terminal

Instrument set 5V/DIV, 20ms/DIV

Measurement conditions When driving at approximately

20km/h The waveform frequency becomes shorter as the vehicle speed increases.

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3 ODO/TRIP function check

(1) Turn on the IG switch and press the ODO/TRIP switch to change the display mode to "ODO" → "TRIP A" → "TRIP B" → "ODO" .....

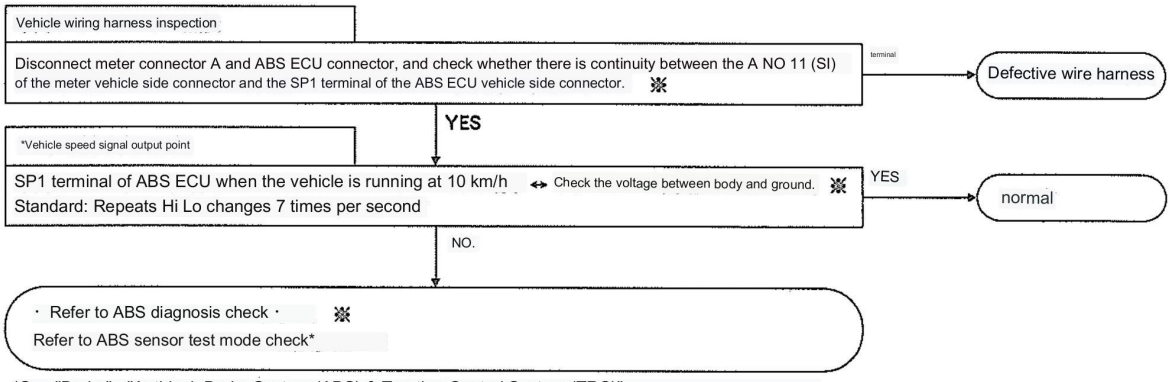
Confirm that it changes to .

〈参考〉 The mode displayed when the IG switch is turned on is the mode that was displayed immediately before the last time the IG switch was turned off.

(2) When displaying "Trip A, B" mode, confirm that the displayed data is reset when the ODO/TRIP switch is held down for 0.8 seconds or more.

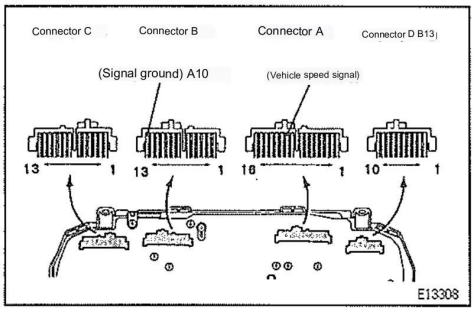
4 Vehicle speed signal check (A/T vehicle)

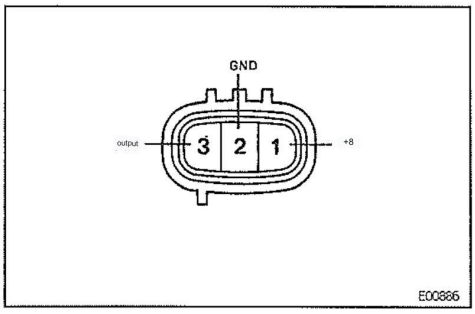
(1) Perform inspection according to the following flowchart.



*See "Brake" - "Anti-lock Brake System (ABS) & Traction Control System (TRC)", "Hydro Booster System & VSC (Vechicle Stability Control)" - "Troubleshooting" (see page 12-76)

JB3696





Speed sensor (in combination meter)

Check the connector with it connected.

1 Operation check

(1) Check the voltage between A100 (vehicle speed signal) and B13 (signal ground) terminals when the vehicle is running at 10 km/h.

Standard: Repeat Hi Lo changes 7 times in 1 second

Speedometer sensor inspection (M/T vehicles)

1 Operation check

(1) Remove the speedometer sensor from the transmission.

(2) Connect the battery to the 1 (④B) terminal of the speedometer connector, and the battery to the 2 (GND) terminal.

(3) Check the voltage between terminals 3 (output) and 2 (GND) when rotating the shaft in the state of (2).

standard Repeat Hi Lo changes 4 times during one rotation of the shaft

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tachometer

Tachometer check

1 Top point検

(1) Connect the tachometer and start the engine.

(2) Check the tachometer reading error.

Do not rotate each engine above the permissible rotation speed (more than the red zone rotation speed displayed on each meter).

Reference value

Tester instructions [r/min]	Allowable rotation speed [r/min] Values in parentheses are reference
700	values 630~770
1000	(900~1100)
2000	(1850-2150)
3000	2800-3200
4000	(3800~4200)
5000	4800~5200
*6000	(5750~6250)
*7000	6700-7300

* indicates gasoline vehicle

T0040192

Water Temperature Gauge

Water Temperature Receiver Gauge Inspection

1 Operation check

(1) Connect the water temperature chasender gauge connector.

Separate.

(2) When the ignition switch is turned on, the water tempering

Check that the pointer on the ratcha receiver gauge indicates C or lower.

Ru.

(3) When the connector disconnected from the water tempera chasender gauge in the state of (2) is short-circuited to the body ground, confirm that the pointer of the water tempera chasender gauge indicates H or higher.

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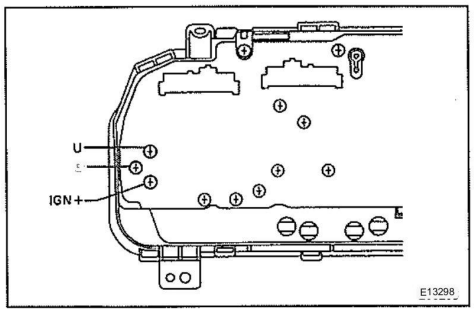

2 Resistance measurement

(1) Resistance value between each terminal of water temperature receiver gauge

Measure.

Reference

Measurement terminal name	Resistance value [Ω]
IGN+↔U	54
IGN+↔E	175.7
U.E.	229.7

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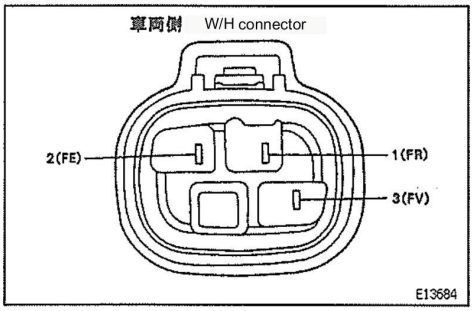
Water Temperature Chasender Gauge 1

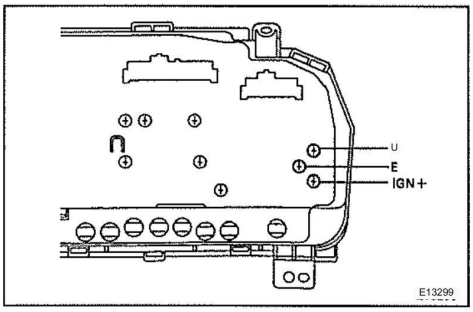
Measuring resistance

(1) Measure the resistance between the gauge terminal and the gauge body.

Standards

Temperature [°C]	Resistance value [Ω]
50	234~314
120	24.1~28.2





fuel gauge

TOD40193

Be sure to turn off the ignition switch when refueling do.

Fuel receiver gauge inspection

1 Operation check

(1) Disconnect the fuel sender gauge connector. (2)

When the ignition switch is turned on, the fuel reception

Check that the bar gauge pointer indicates E or below.

(3) From the state of (2), short-circuit between terminals 1 (FR) and 2 (FE) of the vehicle wire harness side connector of the fuel sender gauge, and check that the pointer of the fuel receiver gauge indicates F or higher.

Wait until the gauge pointer has settled down.

2 Resistance measurement

(1) Measure the resistance between each terminal of the fuel receiver gauge.

Take a look

Measurement terminal name	Resistance value [Ω]
IGN+↔U	126.2
IGN+↔E	280.5
U.E.	154.3

fuel sender gauge

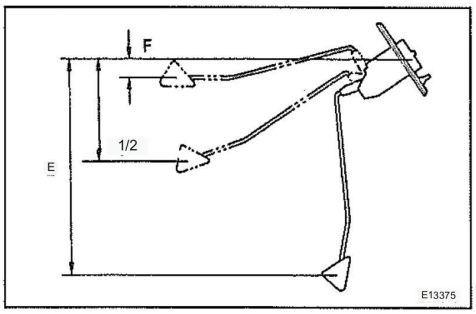
1 resistance check

(1) Remove the fuel sender gauge and check that the float moves smoothly.

(2) Check the resistance between terminal 1 (FR) → terminal 2 (FE) when changing the float position between points E and F. Also, confirm that the resistance value changes continuously.

Standards

level	Float position [mm]	Resistance value [Ω]
F	22.3	3.0
1/2	144.7±3	32.5
E	249.7+3	110



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T0049194

fuel receiver gauge

Warning

注意 Be careful of fire.

Fuel receiver gauge warning check

1 Level switch inspection

(1) Remove the fuel sender gauge. (2) Turn

on the ignition switch and turn on the fuel level switch. of

Check the condition of the warning lamp when you put it

inside. Standard Warning lamp turns off

T0048539

Fuel filter warning Fuel

filter warning inspection

1 Circuit inspection

(1) When the ignition switch is turned on, the fuel fill

Check that the warning lamp is lit. (2)

Disconnect the fuel filter connector.

(3) While the engine is running, connect the W/H side connector terminal of the settler.

Check the condition of the filter warning lamp when the time is shortened.

do.

Standard Warning lamp lights up

2 Level warning switch inspection

(1) Check the fuel filter level war from the fuel filter.

Remove the switching switch.

(2) Move the float of the fuel level warning switch up and down.

Check the resistance between each terminal of the connector when the connector is connected.

Standard value When the float is in the raised position...7~10Ω

When the float is in the lowered position...no continuity

T0048540

T-BELT warning (diesel vehicle) T-

BELT warning adjustment

1 T-BELT mode display

(1) Set the ODO/TRIP display screen to “ODO” and turn off the

ignition switch.

(2) Turn on the ignition switch while pressing the trip switch 16

and hold it for at least 5 seconds.

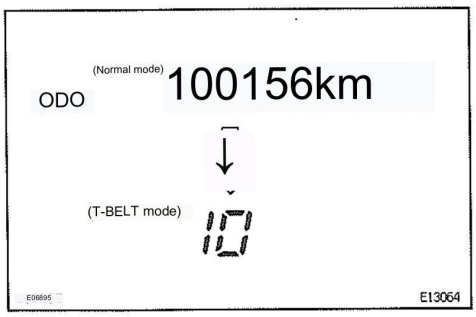
(3) Release the trip switch and press the trip switch again within 5

seconds.

(4) Shift to T-BELT mode and the initial setting “10” (10,000 km) will be displayed.

<Reference> If the meter has been replaced, the displayed value may not be the

initial setting.



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2 Rewrite exchange setting value

(1) Press the trip switch and rewrite the replacement setting value.

conditions	Settings open
When replacing the belt	10 [10,000 km]
When replacing the meter	(10 [10,000 km]) — (Distance traveled at time of meter replacement)

〈参考〉 Each press adds 10,000 km, and 200,000 km will add up to 10,000 km. Doru. However, if no switch is operated for 30 seconds or more, "ODO" will be displayed with the previous setting value and the unit will return to normal mode.

3 Exiting T-BELT mode

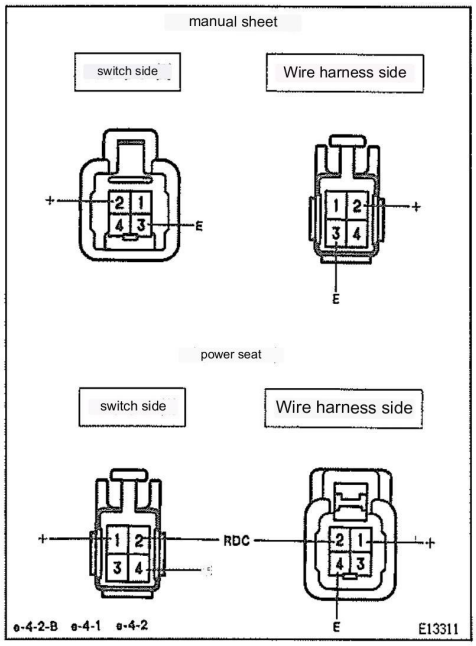
NOTE When the T-BELT mode is terminated, the T-BELT warning will be reset even if the belt and meter have not been replaced.

set

(1) After setting the replacement setting value, hold down the trip switch for more than 5 seconds hold and release the lip switch.

(2) "ODO" will be displayed, indicating that the warning lamp is off.

confirm.



T0040197

seat belt warning

Seat belt warning check

1 Circuit inspection

(1) Confirm that the seat belt warning lamp lights up when the ignition switch is turned on and turns off when the tongue plate is set.

(2) Disconnect the buckle switch connector of the driver's seat belt.

(3) Turn on the ignition switch and short-circuit between the 2(+) and 3(E) terminals (manual sheet), 1(+) terminal → 4(E) terminal (power seat) of the wire harness side connector. Check the condition of the seat belt warning lamp.

Standard Warning lamp lights up

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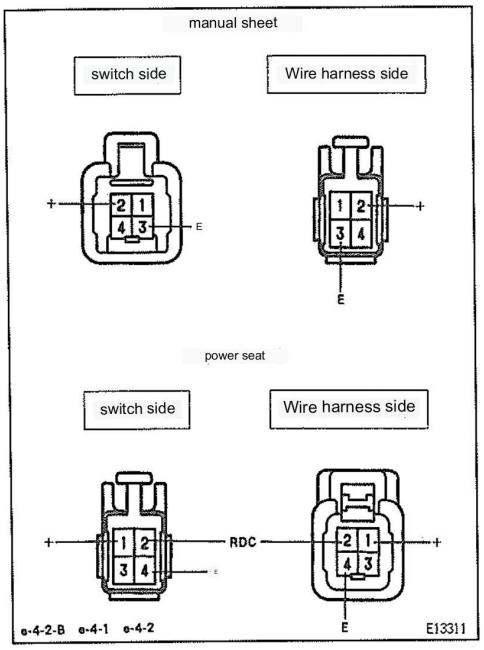

Buckle switch inspection

1 Continuity check

(1) Disconnect the buckle switch connector of the driver's seat belt. (2)

Check continuity between the terminals of the buckle switch connector.

manual sheet

Standard When tongue plate is set, 2(+) terminal 3(E) terminal...with conductor

When tongue plate is free, 2(+) terminal 3(E) terminal...no conductor

power seat

standard ○ Continuity available

ID / Terminal name / switching	1	2	4
	+	RDC	E
dunk plate When set	○		-○
Free time		○	○

JB3434

T0G49105

oil pressure warning

oil pressure switch

1 Continuity check

(1) Disconnect the oil pressure switch connector and check continuity between the switch connector terminal and ground.

standard When the engine is stopped...Continuity exists

When the engine is rotating...No continuity

T0040109

brake warning

Brake warning check

1 Circuit inspection

(1) Disconnect the parking brake switch connector.

(2) Turn on the ignition switch.

(3) Parking brake switch vehicle wiring harness side connector

When the terminal of the controller is grounded, the warning lamp status is turned on.

Inspect.

Standard Warning lamp lights up

(4) Disconnect the brake level warning switch connector.

(5) Turn on the ignition switch.

(6) Brake level warning switch vehicle wiring harness

When a short circuit occurs between the connector terminals, check the condition of the warning lamp.

Standard Warning lamp lights up

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YQ040551

parking brake switch

Parking brake switch inspection

1 Continuity check

(1) Parking brake switch connector terminal and body ground Standard

Check continuity between.

When the shaft is pressed...no conductivity

When the shaft is free...continuity exists

level warning switch

1 Continuity check

(1) Disconnect the level warning switch connector, connect a tester, and check continuity between each terminal.

standard When the float is up...No continuity When the float is down...There is continuity

T0049852

Door warning

courtesy lamp switch

1 Continuity check

(1) Switch body of courtesy lamp switch of each door and vehicle body

Check continuity with earth.

With reference continuity

(2) Conductivity between the courtesy lamp switch terminal of each door and the switch body.

Check the information.

Standards When the switch is pressed•••••••No continuity

When the switch is released...There is light continuity

T0049553

Shift position indicator

Shift position indicator inspection

1 Circuit inspection

(1) Disconnect the neutral start switch connector and turn on the ignition switch.

(2) Short-circuit each terminal of the vehicle wire harness side connector of the neutral start switch and check that each position lamp lights up.

Note R Make sure that the reverse warning buzzer built into the combination meter sounds when the shift position lamp lights up.

16

Congratulations times
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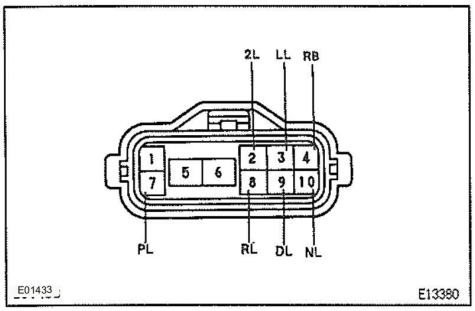


standard

ID	short terminal	Lit position lamp
7↔4	PL↔RB (C)	P
8-4	RL↔RB (C)	R
10-4	NL↔RB (C)	N
9+4	DL↔RB (C)	D
2↔4	2LRB(C)	2
3-4	LL↔RB (C)	L

( ): Vehicles equipped with 1G-FE, 2L-TE engine

Neutral start switch inspection

("Automatic transaxle" - "Basic inspection and adjustment")

-Refer to "Neutral start switch inspection and adjustment")

T0049554

Reverse warning

Reverse warning check

1 Operation check

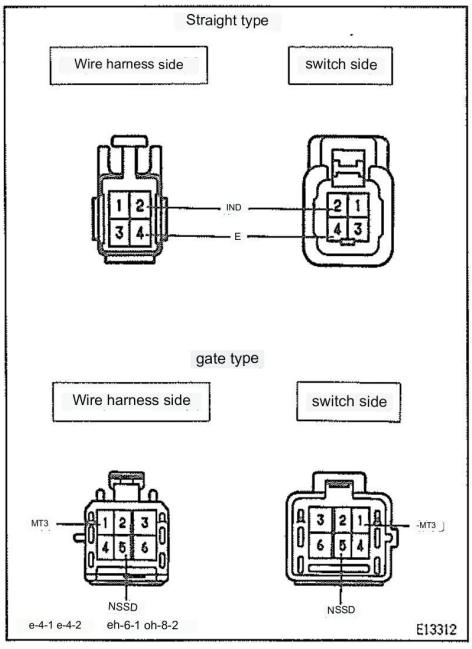
(1) When shifting to R range, shift position indicator

The R lamp lights up and the reverse warning buzzer sounds.

To verify that.

2 Reverse warning buzzer check

("Automatic transaxle" — "Retreat warning device ⌟ -Refer to "Individual inspection")



T0049555

O/D OFF indicator

O/D OFF indicator check

1 Circuit inspection

(1) Disconnect the transmission control switch connector and turn on the ignition switch.

(2) When short-circuiting between terminals 2 (IND) and 4 (E) (straight type), and between terminals 1 (MT3) and 5 (NSSD) (gate type) of the wire harness side connector, the O/DOFF indicator lamp Check condition 16 do.

Criteria O/D OFF indicator lamp lights up.

Inspect the transmission control switch

(see ``Automatic Transaxle" - ``ECT" - ``Individual Inspection")

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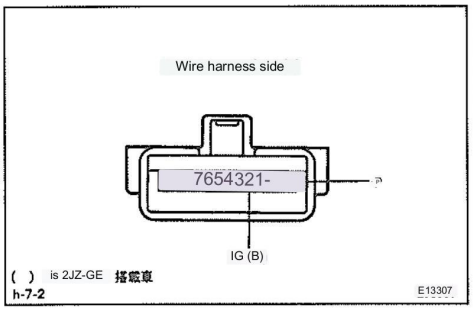
T0049556

ECT indicator (PWR)

pattern select switch



1 Continuity check

(1) Disconnect the pattern select switch connector and turn on the ignition switch.

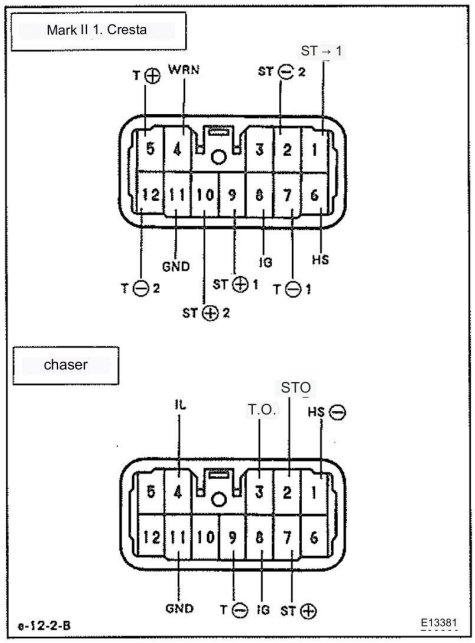
(2) Check the status of the ECT indicator lamp (PWR) when there is a short circuit between terminals 1(P) and 3(IG or B) of the wiring harness side connector.

standard PWR indicator lamp lights up

T0049557

Light disconnection warning

lamp fail rear indicator sensor



1 Operation check

(1) Remove luggage compartment trim inner cover RH and measure continuity and voltage between each terminal and body ground according to the inspection order and instructions in the table below. Make sure all stop lamps and tail lamps are in normal condition.

Mark II. Cresta

order	Measurement condition	connector terminal number	name	Item	Measurement condition	standard	If it is outside the standard, the defective location
1	Disconnected vehicle side connector connection	11	GND	Normal time		With conductor OV→10~14V	Vehicle side
2		8	IG	voltage ignition switch OFF→ON			
3		9 10	ST⊕1 ST⊕2	Press the voltage brake pedal open		0V → 10 ~ 14V	
4		5	T+	voltage light control switch OFF→TAIL		0V → 10 ~ 14V	
5		1	STO1	ST2 voltage Brake pedal released → depressed		OV9V or higher	sensor
6		2627	T1	Voltage Light Control Switch OFF TAIL		OVV or higher	
7		4	WRN	Voltage	Engine running light control switch TAIL→U Disconnect one side of the combination lamp connector.	9V More than - 2.5V or less within 2 seconds	
8					While the engine is running, disconnect one side of the rear combination lamp connector and release the brake pedal → press the brake pedal.		
9					While the engine is running, disconnect the center stop lamp connector and release the brake pedal → press the engine running light control switch TAIL→Light Disconnect the license plate lamp connector		

16

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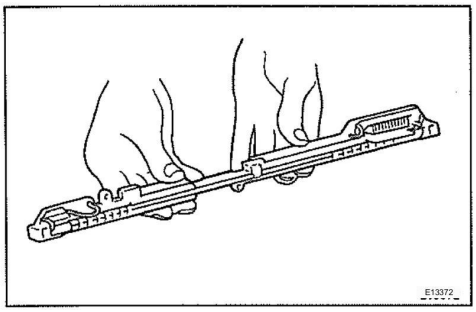
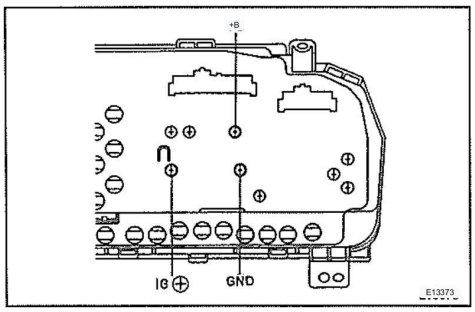
chaser

order	Measurement connector conditions	terminal number	child name	item	Measuring conditions	standard	If it is outside the standard, the defective location
1	Connection disconnected vehicle side	11	GND	conductor normal	Time	With continuity	Vehicle side
2		8	IG voltage		Ignition switch OFF ON	0V → 10 ~ 14V	
3		7	ST⊕	Voltage Release the brake pedal		0V → 10 ~ 14V	
4		3		T+ Voltage Light Control Switch	OFF → TAIL	0V → 10 ~ 14V	
5	connector connection	1 2	HSO STO	Press the voltage brake pedal open		OVV or higher	sensor
6		9		T voltage Light control switch OFF→TAIL		OV9V or higher.	
7		4	IL	Yosho	Engine running light control switch TAIL → Disconnect one side of the rear combination lamp connector.	9V that's all → 2.5V or less within 2 seconds	
8					Rear combination lamp connector while engine is running Detach one side of the brake pedal and release the brake pedal. Connect the center stop lamp connector while the engine is running. Depress the release brake pedal		
9					Engine running light control switch TAIL → Disconnect the license plate lamp connector.		

JB3278





Cold cathode tube W/computer ASSY (meter lighting)

cold cathode tube

注意 Avoid touching the cold cathode tube section directly with your hands, and hold it as shown in the illustration. handle.

1 Cold cathode tube inspection

(1) If the cold cathode tube does not light up, remove the cold cathode tube and check for discoloration (black or yellow) and cracks at both ends of the cold cathode tube.

2 Operation check

(1) With the connector connected, check the continuity and voltage of the computer ASSY from the back of the meter.

standard

standard

contact terminal		Measuring conditions	基 Semi-regular
tester+	tester ⊖		
IG ⊕	body earth	IG switch OFF→ON	1V or less → 10~14V
+B	body earth	Always	10 ~ 14V
GND	body earth	Continuity check	Always guided

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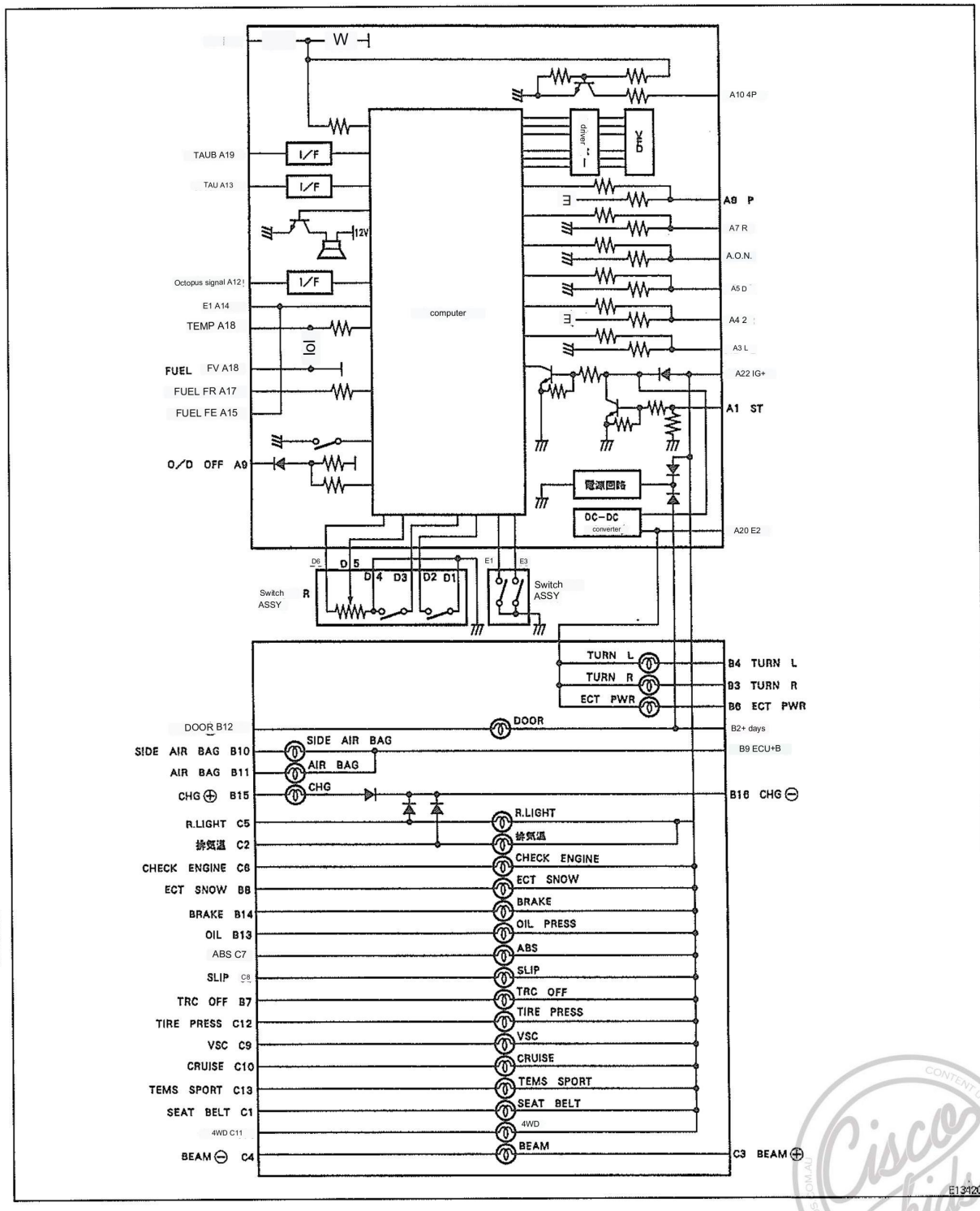
T0050878

digital meter

Internal circuit diagram



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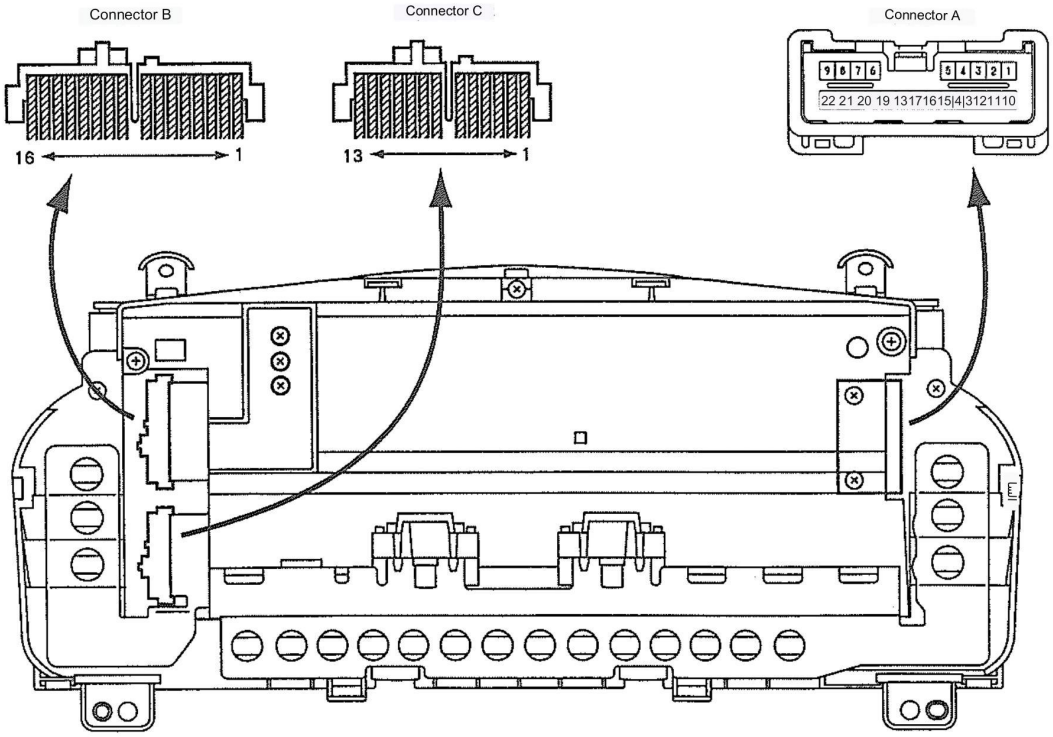
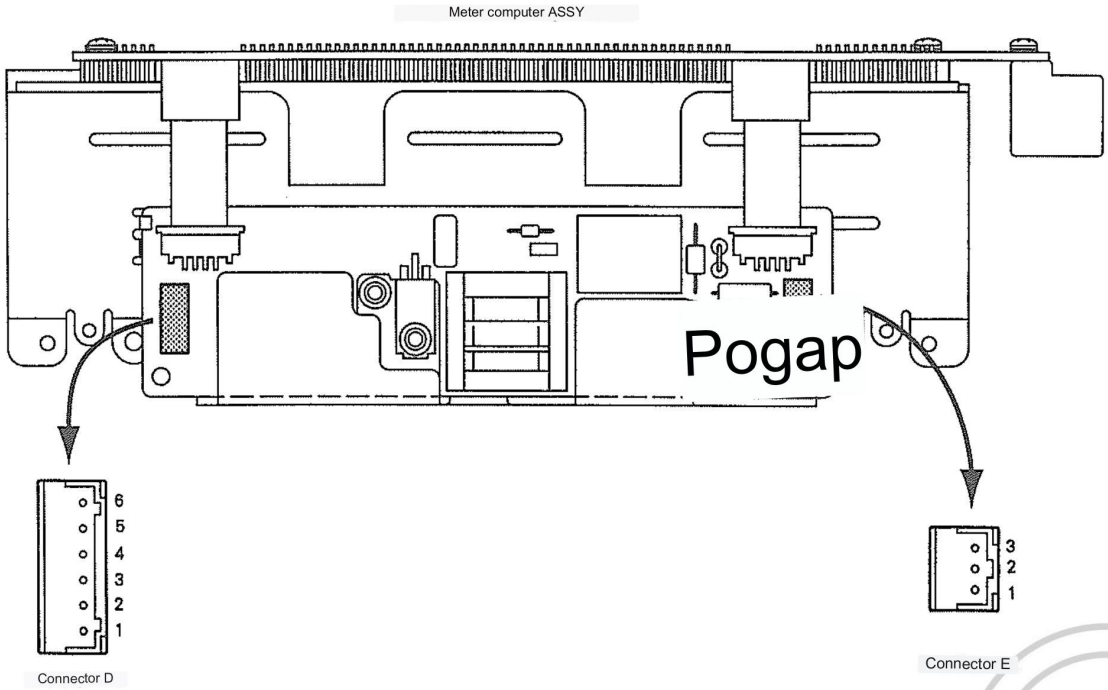
(external connector)



(internal connector)



Pogap

E13413 E13414 h-22-2-A

E13446

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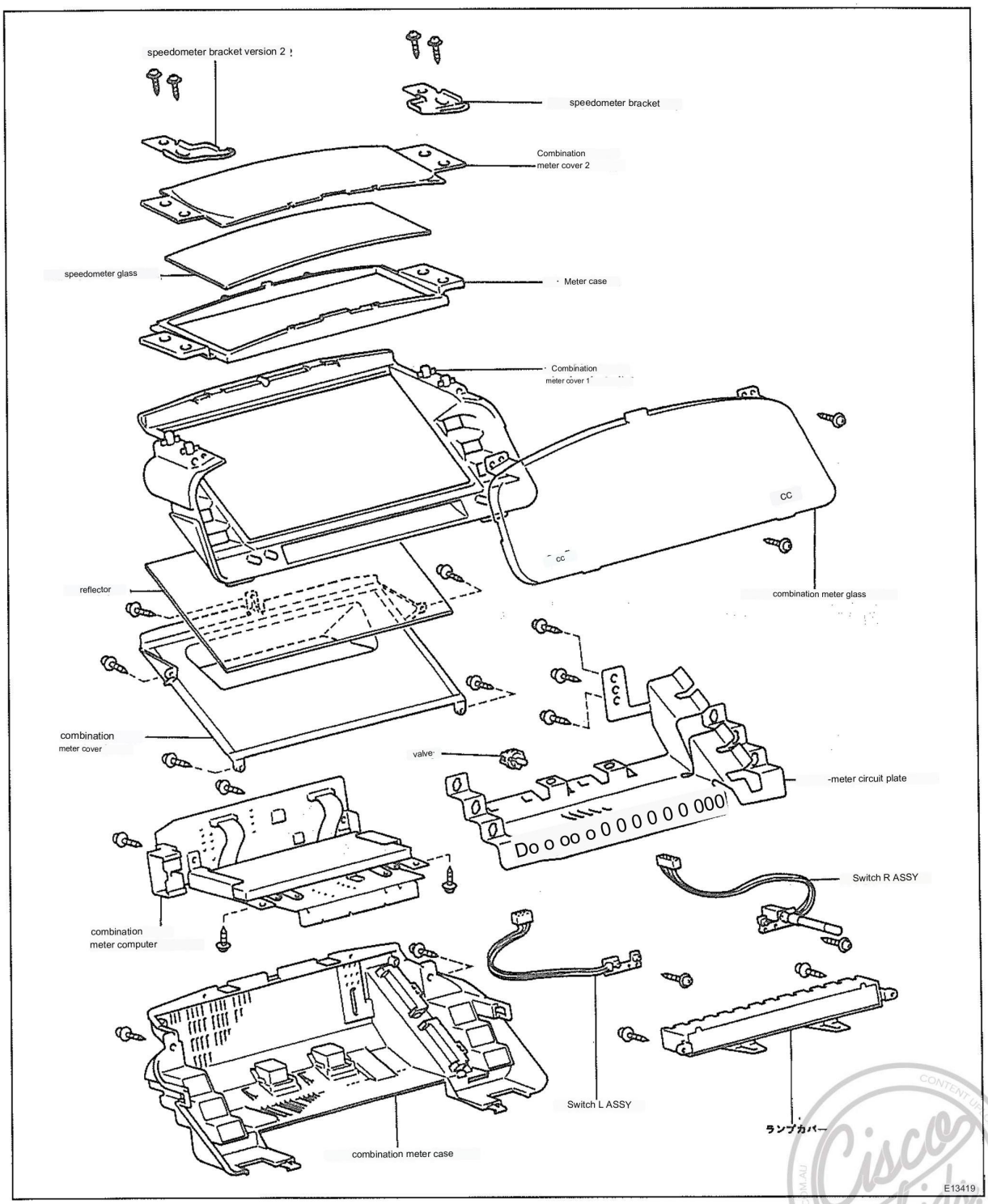
Exploded configuration diagram

〈参考〉 For information on installing and removing the combination meter ASSY, refer to "Optitron meter" - "Combination meter ASSY".



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return
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T0049189

combination meter

Computer ASSY

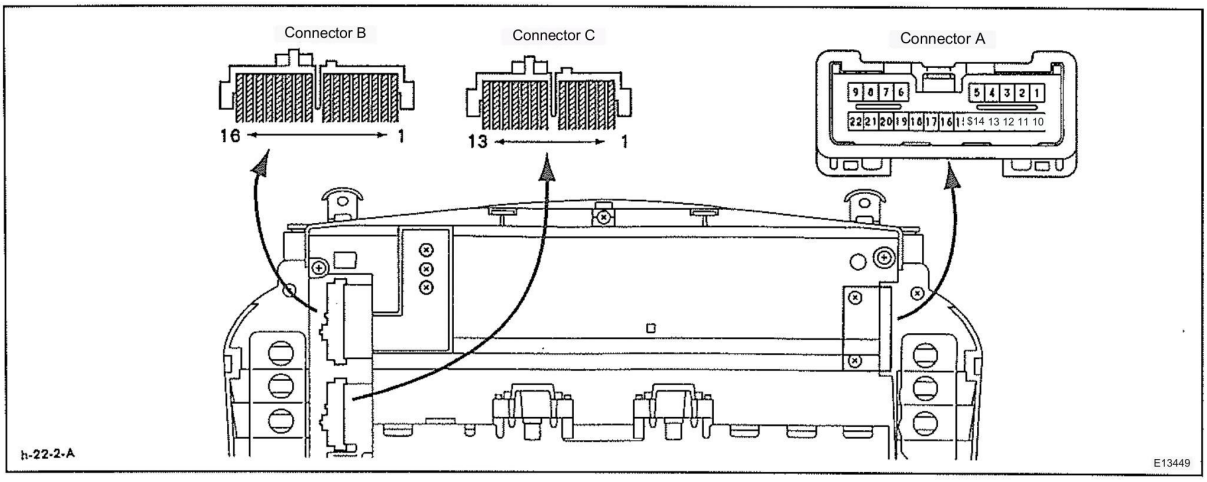
Combination meter computer ASSY

1 Input/output signal check

(1) Connect the mini test lead to the Toyota Electrical Tester and measure between each terminal or between each terminal and body ground.

(2) Use an oscilloscope to confirm that a pulse is generated between each terminal or between each terminal and body ground.

▪ CAUTION Inspect the connector from the back side while it is connected to the combination meter computer. - When measuring voltage, check that the tester is in the voltage range before checking.



基 準

connector	端子番号	Terminal name	input/output	tester connection	Item	Measuring conditions	standard
^	1	ST	input	A1 ↔ body Earth	Densho	IG switch ON → START	1V or less 10~14V
	2	Lighting⊕	input	A2+ body earth	Kasinosho	IG switch ON, Light control switch OFF → ON	1V or less → 10~14V
	3	L	input	A3 →→ Body Earth	Densho	IG switch ON, shift lever other than L range → L range	1V or less 10~14V
	4	2	input	A4+ Body Earth	電圧	IG switch ON, shift lever other than 2 range → 2 range	1V or less 10~14V
	5	D	入力	A5 ↔ body earth	Yosho	IG switch ON, shift lever other than D range → D range	1V or less 10~14V

16

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connector	Terminal number	Terminal name	input/output	tester connection	item	Measurement condition	standard
A	6	N	input	A6 Body → Earth	Voltage	IG switch ON, Shift lever other than N range → N range	1V Below → 10~14V
	7	R	input	A7+ body earth	Densho	IG switch ON, shift lever other than R range → R range	1V or less 10~14V
	8	P	input	A8 ↔ ボデー earth	Voltage	IG switch ON, shift lever other than P range → P range	1V or less 10~14V
	9	O/D OFF	input	Ag+ body earth	Voltage	Transmission control switch ON → OFF 1V or less → approximately 11V	
	10	4P	output	A10- Body Earth	Kansho	Turn the drive wheel slowly with the IG switch ON	1V or less 5~14V
	11	S.I.	input	A11 Body → Earth	Voltage	Turn the drive wheel slowly with the IG switch ON	1V or less 10~14V
	12	tacoballs	input	A12- ボデー earth	Hz	IG switch ON, engine stopped, engine running	bar lights out → Bar lights up
	13	TAU	input	A13 ↔ Body Earth	Hz	IG switch ON, engine running	Bar off → Bar on
	14	E1	input	A14- Body Earth	導 usually Time		With continuity
	15	FE	input	A15 → body earth	Groove normal time		There is a guide
	16	FV	input	A16 ↔ body earth	Voltage IG switch ON		5V
	17	FR	入力	A17+ body As	Densho	IG switch ON, gas tank full → empty	4.6-0.3V
	18	TEMP	入力	A18+ body earth	Densho	IG switch ON, water temperature 90℃	0.8 ～ 1.5V
	19	TAUB	入力	A19+ body earth	Voltage	IG switch OFF→ON	1V or less 10~14V
	20	E2	input	A20 ↔ body earth	guidance	Always	There is a guide
	22	IG ⊕	input	A22 → body earth	Yosho	IG switch OFF→ON	1V or less → 10~14V
B	2	+B	input	B2+ body earth	Voltage always		10 ～ 14V
	3	TURN R	input	83- ボデー earth	Densho	IG switch ON, turn signal switch right	Below IV 10~14V
	4	TURN L	input	B4- body earth	Yukisho	IG switch ON, turn signal switch left	1V or less 10~14V
	6	ECT PWR	input	B6 → ボデー earth	Toshisho	IG switch ON, Pattern select switch NORM → PWR	1V or less → 10~14V
	7	TRC OFF	input	B7 ↔ Poe earth	Voltage	IG switch ON, TRC OFF indicator lit → off	1V or less 10~14V
	8	ECT SNOW	input	88+ ボデー earth	Voltage	IG switch ON, ECT SNOW indicator On → Off	1V or less → 10~14V
	9	ECU+B	input	B9+ body earth	Voltage always		10 ～ 14V
	10	SIDE AIRBAG	入力	B10 ↔ body earth	Densho	IG switch OFF → ON	Below IV 10~14V

16

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Connector	terminal number =	Terminal name	input/output	tester connection	item	Measurement condition	standard
B		AIR BAG	input	B11- Body Ground	Densho	IG switch OFF→ON	1 V or less 10~14V
	12	door ⊖	input	B12 ↔ Body Earth	Voltage	either door open/close	1V or less 10~14V
	13	OIL	入力	B13 ↔ body earth	Densho	IG switch ON, engine stopped and engine running	1 V or less 10~14V
	14	BRAKE	input	B14- Body Earth	Voltage	IG switch ON, PKB pulled or stepped on	1V or less 10~14V
	15	CHG⊕	input	B15+ Body Earth	Voltage	IG switch OFF→ON	1V or less →10~14V
	16	CHG⊖	input	816- Body Earth	Voltage	IG switch ON, engine stopped engine running	1V or less 10~14V
C	1	seat belt input		C1+ body earth	Voltage	Driver's seat belt not installed → installed	1V or less → 10~14V
	2	exhaust temperature	input	C2+ Body + Earth	Densho	IG switch ON, engine stopped and engine running	1V or less → 10~14V
	3	BEAM＋	input	C3- Body Earth	Voltage always		10～14V
	4	BEAM－	input	C4- body earth	Voltage	Headlight LO→HI	10~14V→1V or less
	5	Rr LIGHT	input	C5 ↔ body earth	Voltage	IG switch ON, engine stopped engine running	1V or less 10~14 V
	6	CHECK ENGINE	input	C6 ↔ body earth	Voltage	IG switch ON, engine stopped, engine running	J1V or less 10~14V
	7	ABS	input	C7 ↔ body earth	Kansho	ABS indicator lit → off	1V or less 10~14V
	8	SLIP	input	C8 ↔ body earth	Voltage	IG switch OFF ON	1V or less 10~14V
	9	VSC	input	C9 → body earth	Voltage	IG switch OFF ON	1V or less 10~14V
	10	CRUISE	input	C10-> 水 day earth	Densho	Cruise control main switch OFF ON	10~14V→1V or less
	11	4WD	入力	C11 → body earth	Densho	IG switch OFF→ON	10~14V→1V or less
	12	TIRE PRESS	input	C12 ↔ body earth	電圧	IG switch OFF→ON	10~14V→1V or less
	13	TEMS SPORT	input	C13+ body earth	Voltage	IG switch ON, TEMS switch NORM→ SPORT	1V or less 10~14V

JE3163

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Troubleshooting by problem phenomenon

<Reference> Perform inspection in numerical order.

Malfunction phenomenon \ Inspection area, order		meter: computer	meter: others	Vehicle speed signal (ABS ECU)	fuel sender gauge	Temperature sender gauge	leos tat	W/H Connect ター	・others, ・Flowchart reference
一般	Meter display does not display properly	1							"Combination meter ASSY" Country ※
	全面真っ黒	3						2	1 fuse
	There is no display other than the warning valve.	5			3		4	2	1 Fuse *"Combination meter ASSY" －[2]
	Turn on the light control switch てもThe light does not	3					1	2	
	dim. The light does not dim even when the light control switch is turned OFF.	3					1	2	
	The brightness does not change even when the rheostat is operated.	2					1		*Using "Light Control Rheostat"
Speed dome メーター	Speedometer error display (remains at 0km/h) ※①	5		3				4	1 車速country signals Commercially available accessories (navigation, etc.) 2 Earth float *"Speedometer" －[1]
	Only the speedometer doesn't light up at all.	1							
	Random speedometer display (number display that does not become a number)	exchange							
	The speedometer display changes frequently/ changes significantly.	4		3				5	1 Ichisaka accessories using vehicle speed signals (Navigation, etc.) 2 Earth float
	Speedometer display error is large	4		3				8	1 Using vehicle speed signal Commercially available accessories (navigation, 2 etc.) Earth float
オドメーター Mail Tail	Only OD/TRIP does not light up at all	exchange							
	OD/TRIP random display (display of numbers that are not numbers)	exchange							
	Neither OD nor TRIP is integrated (speedometer is normal) If the speedometer also does not move, go to ①	exchange							
	Do not accumulate only trips	2	1.Meter switch R						
	Trip meter cannot be reset	2	1. meter switch R						
	Unable to switch display of "ODO, TRIPA, TRIPB"	2	1.Meter switch R						
	"Return to 0.0 km" even though trip has not been reset	3	1. Meter "Switch R					2	
	Odometer shows "999999km" Replacement								
	Odo trip cumulative distance error large	5		3				4	1 Using vehicle speed signal commercially available accessories (navigation etc.) 2 earth float

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Malfunction phenomenon \ Inspection area, order		meter: computer	meter: others	Vehicle speed signal (ABS ECU)	Fuel temperature: sender gauge	Fuel temperature: sender gauge	leos tat	W/H connector	others · Flowchart reference
Tachometer	Tachometer error display	4						3	1 Igniter 2 Commercially available accessories that use engine rotation signals (turbo timer, ※ etc.) "Tachometer" –[1]
	Only the tachometer does not light up at all.	exchange							
	Tachometer 1 segment always lit/ Not lit	exchange							
	Tachometer reading fluctuates ※②	4						3	1 igniter 2 Commercially available accessories that use engine rotation signals (turbo timer, etc.)
fuel receiver gauge	Fuel gauge doesn't light up at all	exchange							
	Fuel gauge 1 segment constant time light/not lit	exchange							
	Fuel gauge reading high (+display)/low indication (display)	2			1			3	
	When the fuel gauge is full, it does not display full.	4			2			3	1 Leave the IG switch ON refueling
	Fuel gauge indication is erratic	3			1			2	
	Does not display enlarged fuel gauge	2	1.Meter switch						
	Fuel gauge remains enlarged	2	1 meter switch L						
	fuel gauge warning light not light	exchange							
	2 The fuel warning lamp lights up even though more than one segment is displayed. Leave it alone	exchange							
	Flashes when fuel gauge IG switch is turned on. Empty display appears after 2 minutes. (Fuel emergency display)	3				1		2	* "Fuel gauge" –[1]
water temperature charge gauge	Only the water tempera- ture gauge does not light up at all.	exchange							
	Water temperature gauge 2 segments always lit/segments not lit	exchange							
	Water temperature gauge indication high (+ display)/indication low (display)	3						2	※ ``Water tempera "Charge" –[1]
	Water temperature gauge instructions unsteady	3				1		2	
	Water temperature gauge is fixed at the lowest water temperature position/at the overheat position Fixed	3				1		2	

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Malfunction phenomenon \ Part of the point, order		meter: computer	meter: others	Vehicle speed signal / (ABS ECU)	fuel sender gauge	Temparacha Sender Gauge	leos tat	W/H Connect	・ others ・ Flowchart reference
インジケーター・ウォーニング etc.	Certain indicators/warnings flash (diagnostic display)								1 Applicable computer
	Certain indicators/warnings remain lit	3	1 Circuit plate						2 Applicable computer or switch
	Certain indicators/warnings do not light up.	4	1 Pulp 2 Circuit Topplate						3 Applicable computer or switch
	Rear light, charge, and exhaust temperature warnings do not disappear even when the engine is running.	3						2	1 alternator
	Reverse warning buzzer does not sound (lit for A/T R)	exchange							
	Buzzer keeps ringing	1							2 Applicable computer
	O/D OFF indicator flashes	2	11 4P mountain signal					3	| "O/D indicator" []

If the output from the meter is estimated to be abnormal during inspection of the system that uses the vehicle speed signal from the meter

Malfunction phenomenon \ Inspection area, order		meter: computer	meter: others	Vehicle speed signal / (ABS ECU)	fuel sender gauge	Temparacha Sender Gauge	leos tat	W / H Connec	・ others ・ Flowchart reference
Vehicle speed signal (4P) output error (Diagnostic display, door not locked) etc.		6		2				5	1 Commercially available accessories that use vehicle speed signals (navigation, etc.) 3 Using vehicle speed signals computer 4 earth float
Kru・	Cannot switch to cruise information display display	2	1 Meter switch L						
Z hmm	"Section mileage" is not calculated "The speedometer is working normally. If the speedometer is not working, go to ①	2							1 Igniter (tacho signal) ※ "Cruise information display" Country
	"Section driving time" is not added "The tachometer is working normally. If the tachometer is not working, go to ②	exchange							*"Cruise Information Display" - [2]
フォ Mail	"Average car" display error is large	5		1				4	12 Igniter (octopus double number) 3 Earth float ※ "Cruise information display" - 12 [3]
ィスヨ	"Average fuel consumption" display error is large	6		1				5	Igniter (tacho signal) 3 Earth float 4 E/G ECU (TAU.TAUB signal) *Cruise information display - 2 [4]
	"Instantaneous fuel consumption display error is large	6		1				5	Igniter (tacho signal) 3 Earth floating 4 E/G ECU (TAUTAUB ※ signal) "Cruise information - 2 Igniter [4]
sodisplay	"Instantaneous fuel consumption" always displayed in km/l	6		1				ion	(octopus) 3 Earth float 4 E/ G ECU (TAUTAUB signal) *Cruise information display! – [4]
	Bullshit display (display of numbers that are not numbers)	1							※ "Combination meter ASSY" [1]

16

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TC049827

Combination meter ASSY

troubleshooting

1	Meter display does not display properly
• Part of the displayed text is missing · Part of the bar graph is missing • Bullshit display · Partially unlit	Defective meter computer

2	There is no display other than the warning valve.

Fuse and wire harness inspection

IG switch ON, disconnect meter connector A NO

Is the voltage between the A22 (1G+) terminal of the vehicle side connector and the body ground 10~14V?

NO. → • Defective fuse (GAUGE 15A) · Defective wire harness

YES

Earth inspection (E1)

Disconnect connector A of the meter and connect it to the vehicle side connector.

Ø Is there continuity between A14 (E1) terminal and body ground?

NO. → ·· Poor body ground · Poor wire harness

YES

Earth inspection (E2)

Disconnect connector A of the meter and connect it to the vehicle side connector.

Ø Is there continuity between the A20 (E2) terminal and body ground?

NO. → • Defective body grounding • Defective wire harness

YES

Starter signal check

IG switch ON, disconnect meter connector A, and connect A1 (ST) terminal of vehicle side connector to body

Is the voltage between the terminals 1V or less?

NO. → Starter signal system failure

YES

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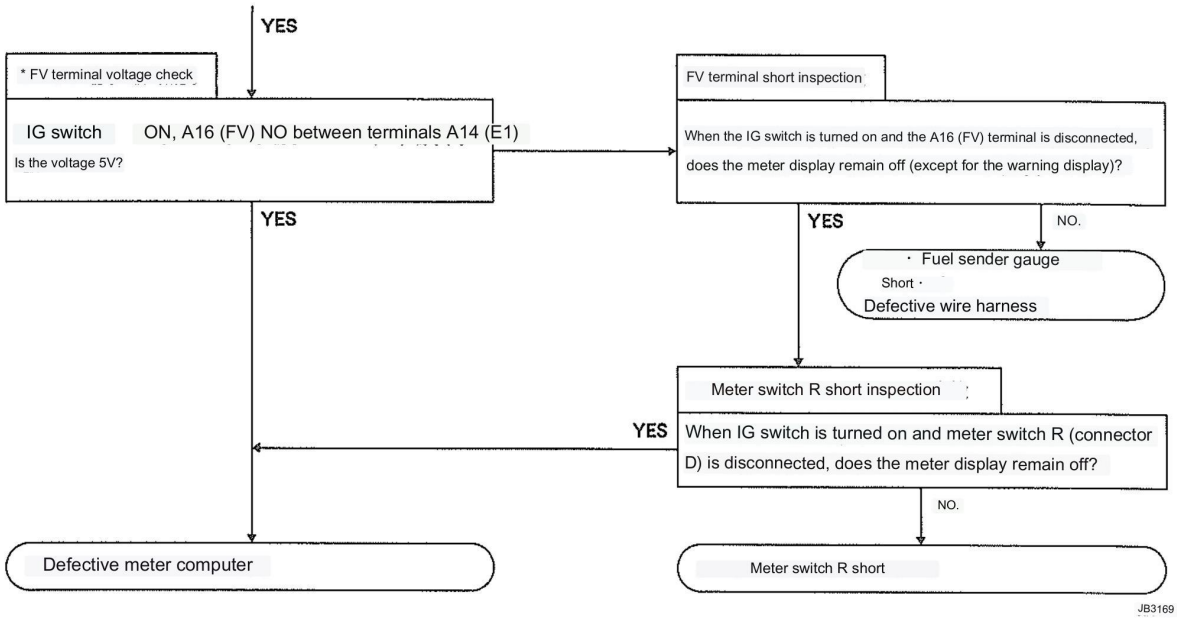
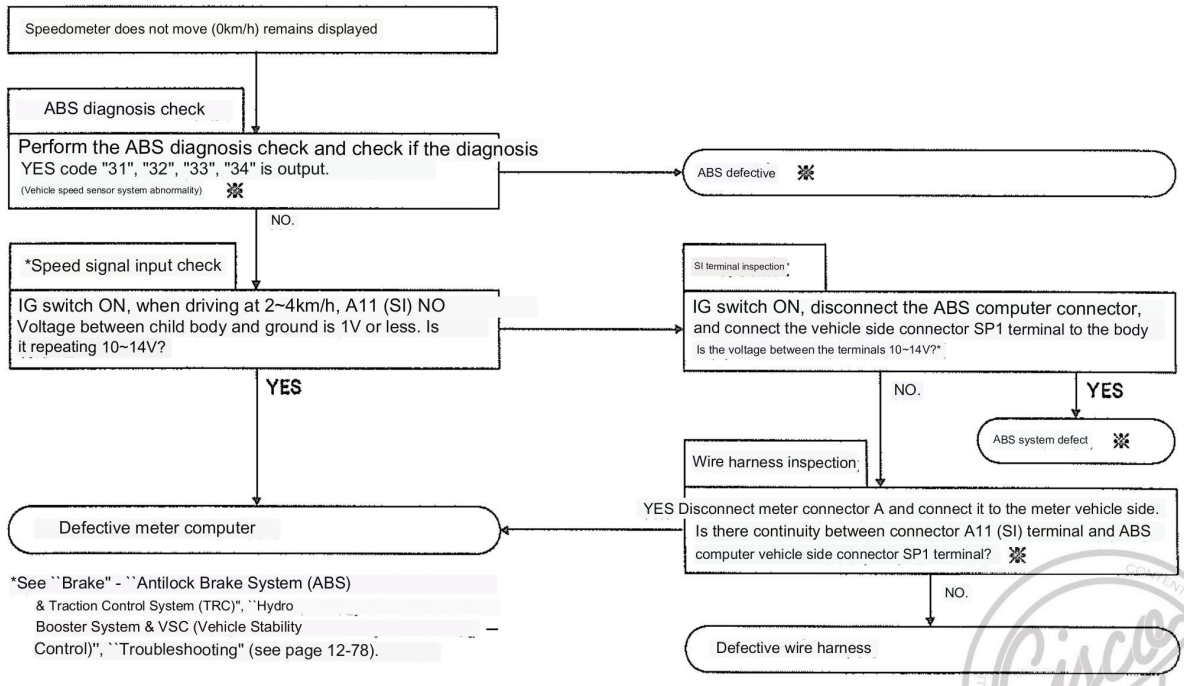


speedometer

troubleshooting

1 Speedometer abnormal display



*See ``Brake" - ``Antilock Brake System (ABS) & Traction Control System (TRC)", ``Hydro Booster System & VSC (Vehicle Stability Control)", ``Troubleshooting" (see page 12-78).

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Speedometer unit inspection

Speedometer check

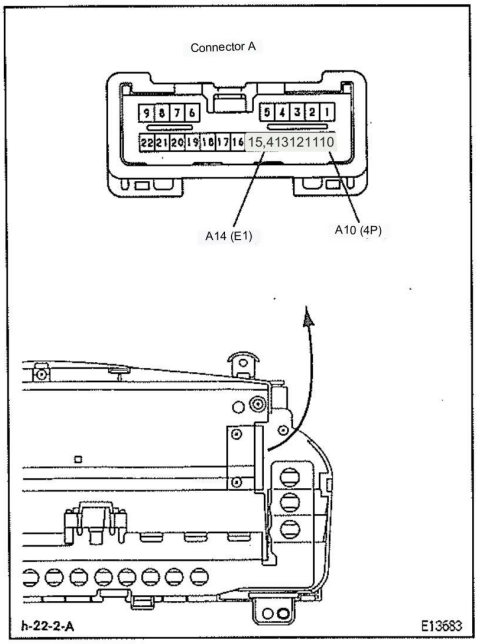
1 On-board inspection

(1) Using a speedometer tester, check the speedometer instructions

Check for errors and operation of calculator.

Standards

Tester indication standard speed [km/h]	Meter reading tolerance range [km/h]
40	36~46
60	54~69
80	72~92
100	90~115
120	108~138
140	126~161
160	144~184



Note If the tire pressure is inappropriate, the indication error will increase.

2 Vehicle speed signal check (A/T vehicle)

(See "Optitron meter" - "Speedometer")

Speed sensor check (in combination meter)

Note Check the connector with it connected.

1 Work inspection

(1) Combination meter when the vehicle is running at 10km/h

Check the voltage between the A10 (4P) terminal → A14 (E1) terminal.

Quasi Repeat Hi Lo changes 7 times in 1 second

T0049700

tachometer

troubleshooting

1 Tachometer error display

Tacho signal check

Disconnect meter connector A and connect it to the vehicle side.
Tar's A12 (Tacho signal) Pulse between terminal and body ground.
Is there a problem? (see waveform 1)

NO. → Tacho signal failure

YES ↓

meter bad computer

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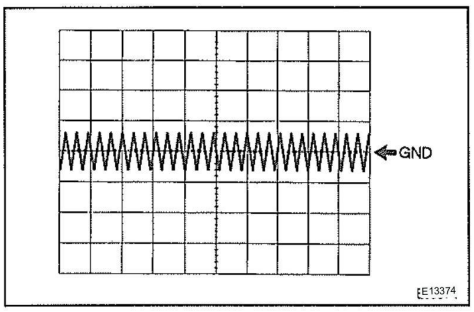


waveform 1

Measurement terminal A11 (tacho signal) Terminal Body ground Instrument set 5 V/DIV, 20ms/DIV

Measurement conditions: After warming up, during idling

Caution As the engine speed increases, ① the waveform amplitude increases. ②The waveform period becomes shorter.

Tachometer unit inspection

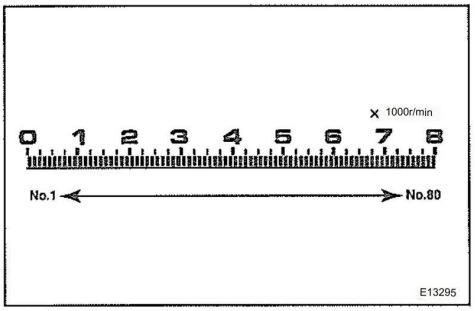
Tachometer check

1 On-board inspection

(1) Connect the tachometer and start the engine.

(2) Check the tachometer reading error.

Caution : Each engine should be rotated at or above the allowable rotation speed (displayed on each meter). Do not rotate the engine above the red zone speed.



Standards

Tester instructions [r/min]	Lighting segment no.	
engine stopped	0	———
250 ~ 550	1~5	5 segments lit simultaneously*
550 ~ 650	1~6	Lights up one segment at a time
650 ~ 750	1~7	
⋮	⋮	
3850 ~ 3950	1~39	
3950 ~ 4100	1~40	12 segments lit at the same time
4100 ~ 4300	1~42	
4300 ~ 4500	1 ~ 44	
⋮	⋮	
6700 ~ 6900	1~68	
6900~	1~70	No light above 7000rpm

JB3346

Congratulations times
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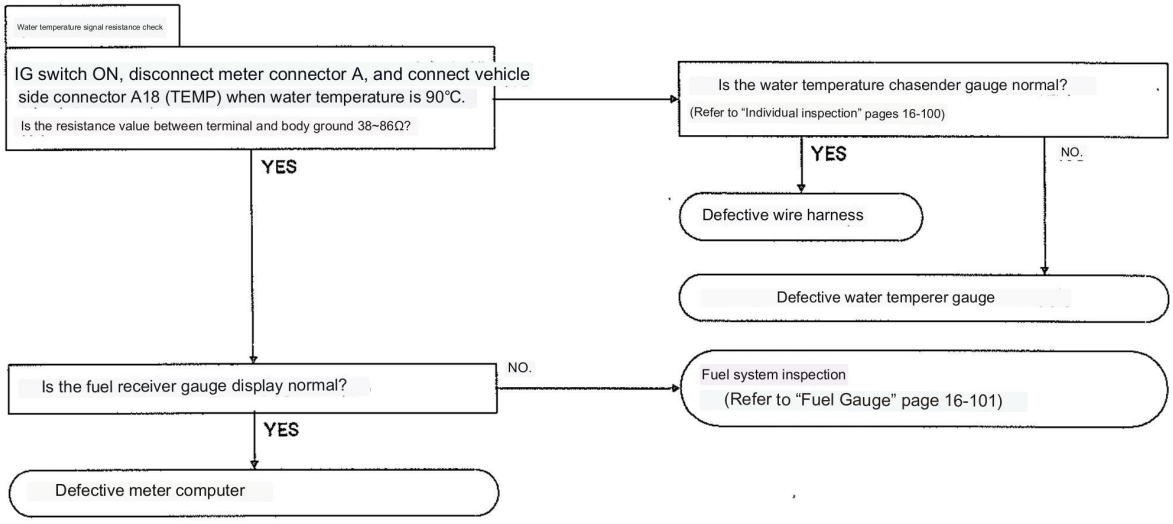
T0049702

Water Temperature Gauge

troubleshooting

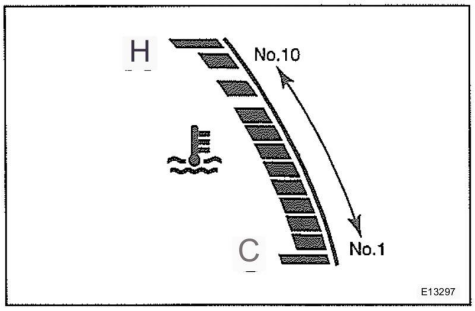
1 Water temperature abnormality display



JB3171

Water temperature gauge individual inspection

Water Temperature Receiver Gauge Inspection



E13297

1 Operation check

(1) Check the water temperature receiver gauge display and water temperature.

do.

standard

Segment No.	Water temperature [°C]	Segment No.	Water temperature [°C]
1	less than 50	6	80-110
2	50~60	7	110~116
3	60~65	8	116~118
4	65~70	9	–
5	70~80	10 flashes)	118 or more

(2) Disconnect the sender gauge connector.

(3) When the ignition switch is turned on, the receiver gauge

Check the display.

Standard Only segment No. 1 lights up

(4) Connector separated from sender gauge is grounded.

Check the sea bar gauge display.

standard Only segment No. 10 flashes

16

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Water Temperature Cender Gauge

1 Resistance measurement

(1) Measure the resistance between the gauge terminal and the gauge body.

Standards

[Temperature [°C]	Resistance value [Ω]
50	234~314
120	24.1~28.2

T0048703

fuel gauge

注意 Be sure to turn off the ignition switch when refueling do.

troubleshooting

1 Fuel gauge abnormal display

●About fuel emergency display

If the FR input becomes abnormal voltage (4.8V or more or 0.06V or less) due to some abnormality, an emergency display will be displayed.

Display method

· Immediately after turning on the IG switch, all segments flash.

- Displays empty after 2 minutes. However, if the abnormality is restored within 2 minutes, the display will be equivalent to the input signal level within 1 second.

Is the fuel sender gauge normal?
(Refer to "Individual Inspection" pages 16-102)

NO. → · Defective fuel sender gauge · Defective wire harness

YES

Inspection of wire harness between meter and sender gauge

Disconnect meter connector A and sender gauge connector, and check whether there is a conductor between meter vehicle side connector A17 (FR) NO terminal and sender gauge vehicle side connector 1 (FR) terminal.

→ Defective wire harness

YES

Defective meter computer

JB3172

16

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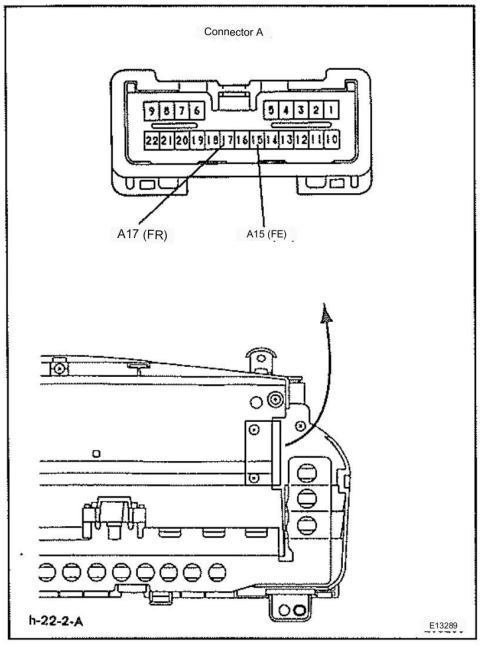

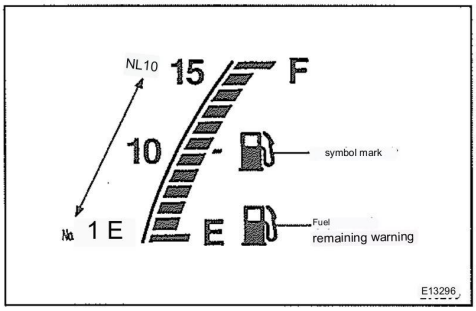

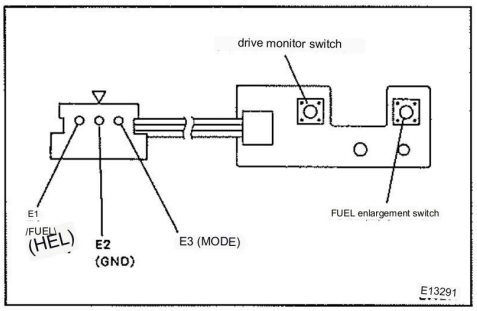

Single fuel gauge inspection

注意 When refueling, be sure to turn off the ignition switch do.

Fuel receiver gauge inspection

1 Operation check

(1) Check the voltage between the A17 (FR) terminal → A15 (FE) terminal of the meter connector, the fuel receiver gauge, and the gasoline capacity.

standard

Normal display

Display	F	1/2
segment number	1~10	1~5
Voltage [V]	4.36 or higher	3.02~3.28
Capacity [L]	Approximately 65	about 32
display	—	E
Segment No.	1~2	1
Voltage [V]	2.5~1.5	0.9~1.1
Capacity [L]	about 13	about 9

〈参考〉 During normal display, a warning lights up in segment No.1.

Enlarged view

Segment No.	1~10	1~5	1
'Voltage [V]	2.3 or higher	1.3~1.5	0.7~0.5
Capacity [L]	approximately 15	about 10	about 5 or less

Meter switch L inspection (FUEL enlarged)

1 Continuity check

(1) Remove meter switch L from combination meter ASSY.

Remove. (2)

When the FUEL expansion switch is pressed, connector E1 (FUEL expansion (Large) Terminal E2 (GND) Check continuity between terminals.

Reference switch ON.....· ····Continuity exists

Switch OFF••••••••• No continuity

16

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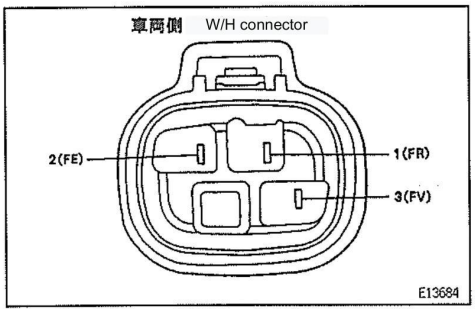
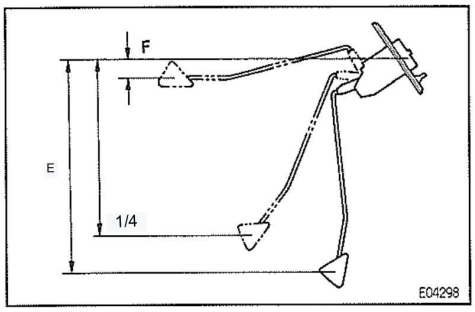
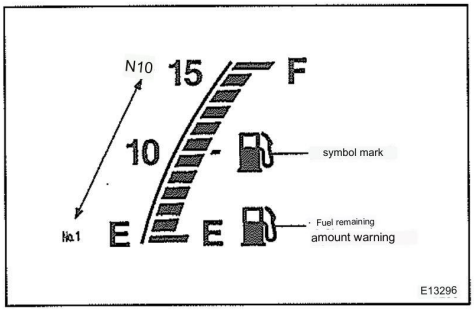
Congratulations times







fuel sender gauge

1 Circuit inspection

(1) Remove the fuel sender gauge and make sure the float is smooth.

Check that it moves.

(2) Disconnect the connector from the fuel sender gauge and check the terminal voltage of the vehicle side connector when the ignition switch is turned on.

Inspect.

Standards 3 (FV) Terminal 2 (FE) Voltage between terminals...

5V (3) Connect the connector and operate the float of the fuel sender gauge.

Check the voltage between the 1(FR)2(FE) terminals when the terminal is turned on.

Standards

level	Float position [mm]	Voltage [V]
F	22.3±3	4.6±0.1
1/4	205.9±3	2.5±0.1
E	249.7±3	0.3±0.1

T0048704

fuel receiver gauge

Warning

Fuel receiver gauge warning check

注意 Be careful of fire.

1 Operation check

(1) Remove the fuel sender gauge.

(2) Gradually move the float from F level to E level, turn the ignition switch ON and OFF, and check the display on the fuel sender gauge and fuel warning lamp.

Ru.

注意 Before checking the display, turn the ignition switch ON and OFF.

Be sure to perform the operations.

standard

Normal display

When segment No. 10~2 is off... ••• Warning display Enlarged

display

When segment No. 10~6 is off ••••• Warning display

<Reference> When a warning is displayed, the symbol mark turns off.

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T0049195

light control rheostat

troubleshooting

1 Brightness does not change even when operating the rheostat

- No dimming,
- continuous dimming

TAIL signal inspection

Disconnect connector A and disconnect the light control switch.
When the switch is turned OFF → TAIL, the ANO of the vehicle side connector
2 (Lighting) Terminal Body Voltage between earth is 1V or less →
Does it change from 10 to 14V?

→ TAIL signal failure

YES

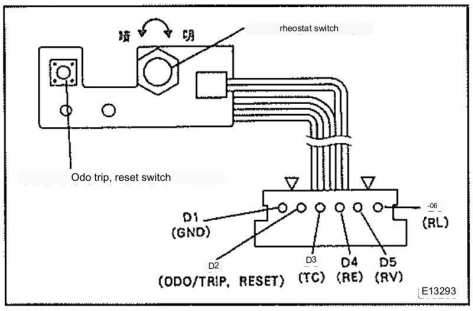
Is the rheostat normal? <Refer to "Individual inspection" on pages 16-103)

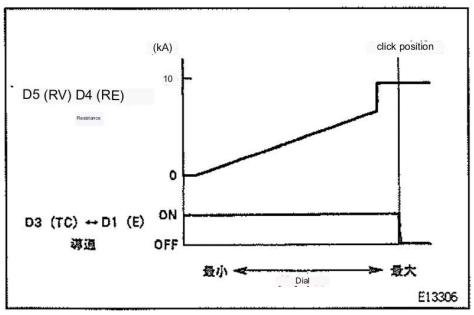
NO. → Defective light control rheostat

YES

meter computer defective

JB3173





light control rheostat

Individual inspection

Meter switch R

inspection (light control rheostat)

1 Continuity check

(1) Remove meter switch R from combination meter ASSY.

Remove.

(2) Check the resistance between each terminal of the light control rheostat connector.

Reference value D6 (RL) Terminal D 4 (RE) Resistance between terminals... 10kΩ D5

(RV) Terminal D4 (RE) Resistance between terminals

...Dial minimum (clockwise rotation) 0 Ω

···Dial at maximum (clockwise rotation) 10kΩ

D3 (TC) Terminal D1 (GND) Continuity between terminals

...When cancelled, there is no continuity...When there is no cancellation, there is continuity

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cruise information display

troubleshooting

1 "Section mileage" error display

When driving on the section mileage screen, 0.1km is not accumulated for every 100m.

Is the speedometer normal?
(Refer to "Inspection of speedometer unit" on pages 16-97)

NO.

Speed signal check

Is there a speed sensor input signal on connector A11 (SI) terminal? (See "Speedometer" pages 16-97)

YES

NO.

YES

Defective meter computer

ABS defective

2 "Section driving time" error display

Accumulated time between E/G ONOFF is not displayed (in hours and minutes)

Is the tachometer normal?
(Refer to page 16-98 "Inspection of tachometer unit")

NO.

Tacho signal check

Disconnect meter connector A and check whether a pulse is generated between the vehicle side connector A12 (tacho signal) terminal body ground.

YES

YES

NO.

Defective meter computer

Defective wire harness

3 "Average vehicle speed" error display

When driving on the "Average Vehicle Speed" screen, the average vehicle speed is not displayed accurately.

Section driving distance (km) / Section driving time (h) = Average vehicle speed (km/h)

"Section driving distance" and "Section driving time" are Is it displayed accurately?

NO.

See "Section mileage check"
See "Section mileage check"

YES

Defective meter computer

16

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4	"Average fuel consumption", "instantaneous fuel consumption" abnormal display

E/G ON When driving in "average fuel economy" mode, average fuel consumption every 10 seconds is not displayed, or "50km/l" remains displayed.

E/G ON, when driving in "instantaneous fuel consumption" mode, instantaneous fuel consumption every 2 seconds is not displayed, or "--km/l" remains displayed. ", and when the fuel is cut, or when the instantaneous fuel consumption exceeds 50.0km/ℓ, "km/ℓ" is displayed.

* Injector injection time signal check

E/G ON, A13 (TAU) between terminal and body ground (see waveform 1)
Is the waveform normal?

NO. → · Engine ECU system failure · Wire harness failure

YES

* Injector power supply voltage check

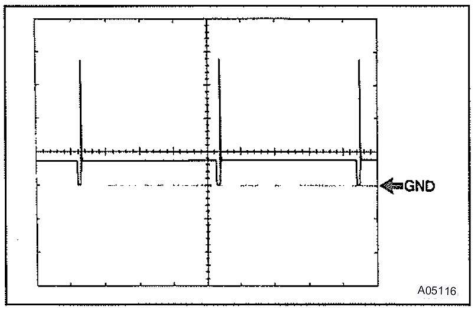
Is the voltage between E/G ON, A19 (TAUB) terminal body ground 10~14V?

NO. → · Engine ECU system failure · Wire harness failure

YES

Defective meter computer

JB3174



waveform 1

Measurement terminal A13 (TAU) terminal Body ground

Instrument set 20V/DIV, 20ms/DIV

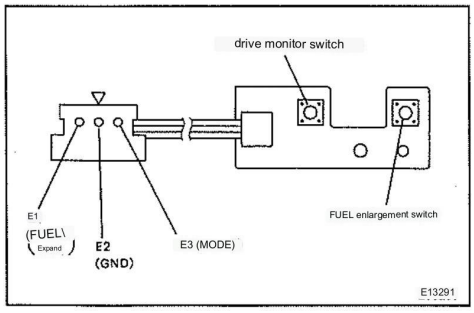
Measurement conditions After the machine,

at idle The waveform frequency becomes shorter as the engine speed increases.

Cruise information

Display unit inspection

Meter switch L inspection (drive monitor switch) 16



1 Continuity check

(1) Remove the meter switch from the combination meter ASSY.

はずす。

(2) Check the continuity between the E1 (MODE) and E2 (GND) terminals of the connector when the drive monitor switch is pressed.

Standard When the switch is pressed••••••••Continuity exists

When the switch is not pressed No continuity

steamed noodles
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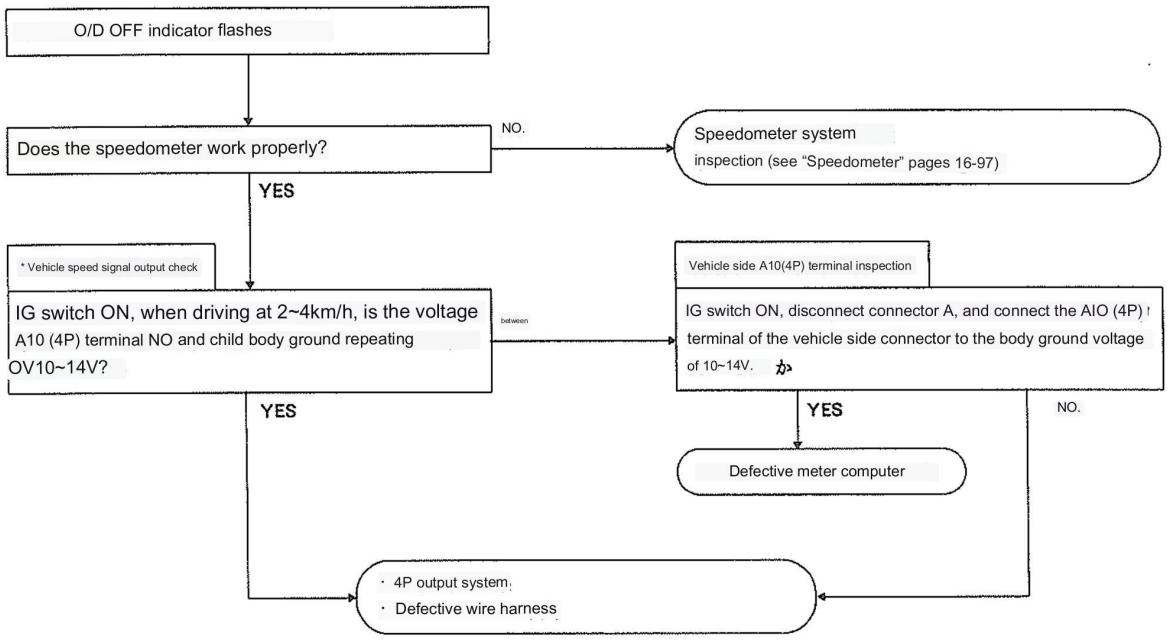
O/D OFF indicator

troubleshooting

1 O/D OFF indicator blinking



JB3175

O/D OFF indicator individual inspection

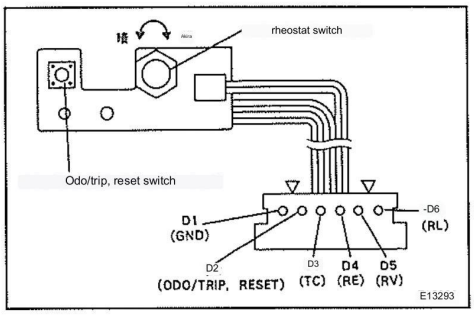
(See "Analog Meter" - "O/D Indicator")

T0040195

total counter

Meter switch R inspection (ODO/TRIP / RESET)

16



1 Continuity check

(1) Remove meter switch R from the combination meter ASSY.

(2) Connector D1 (GND) when ODO/TRIP switch is pressed

Terminal D2 (ODO/TRIP / RESET) Check continuity between terminals. Standard

When the switch is pressed••••••••• There is a road

When the switch is not pressed...No continuity

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Seat belt warning

Oil pressure warning

Brake warning

Parking brake warning

Door warning

Shift position indicator

Reverse warning

ECT indicator light

disconnection warning

(For the above warnings and indicator inspection, refer to "Analog meter")

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T0048598

window defogger

Preparation items

instrument

	09082-00012	toyota electrical tester	Each part is for use as a pointer.
	(09083-00060)	Mini test lead	For connector inspection

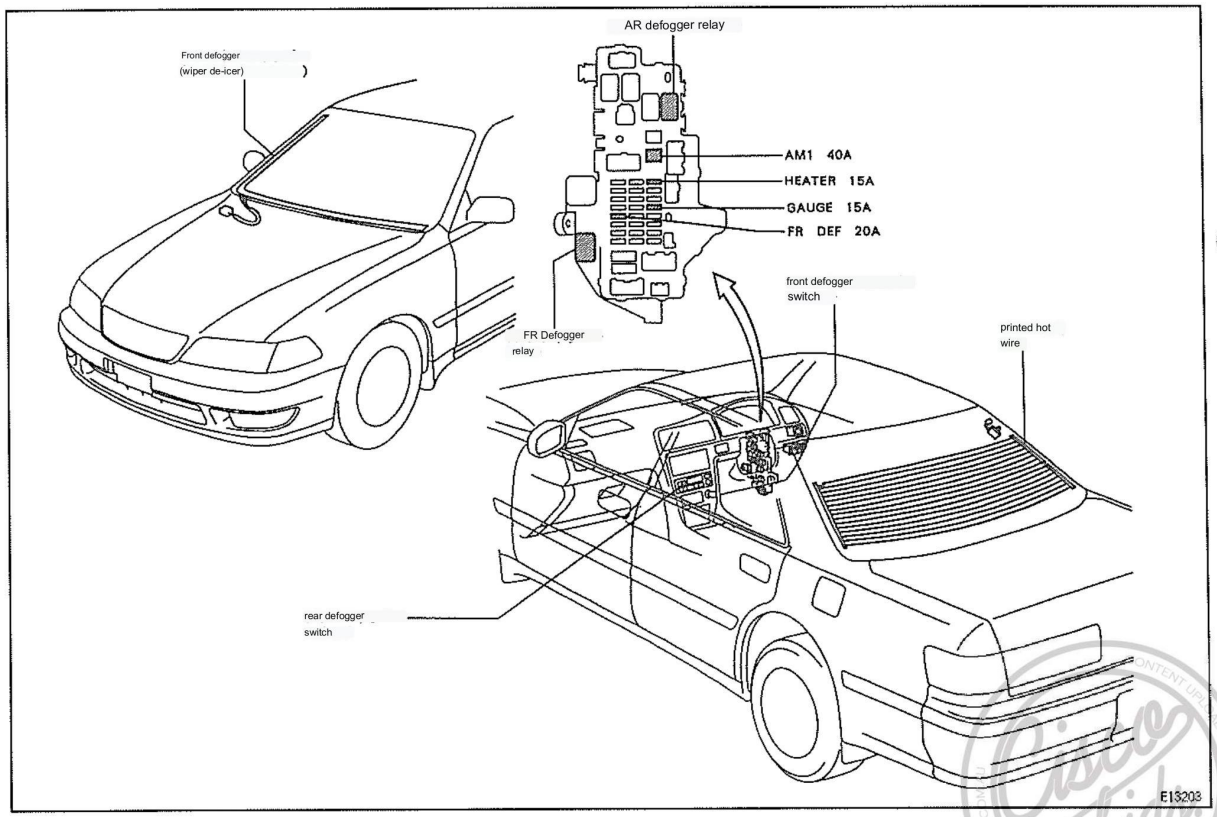
Oils and fats Others

Aluminum foil 50501	For inspecting rear window defogger
Fine brush, white gasoline, masking tape 52901	For rear window defogger repair
*Repair paste (Fujikura Kasei Paste D-500) 50101	For rear window defogger repair

*Tsuchi Co., Ltd. TEL 052-331-5451 2-9-29 Kamimaezu, Naka-ku, Nagoya 460

T0048599

Parts layout diagram



16

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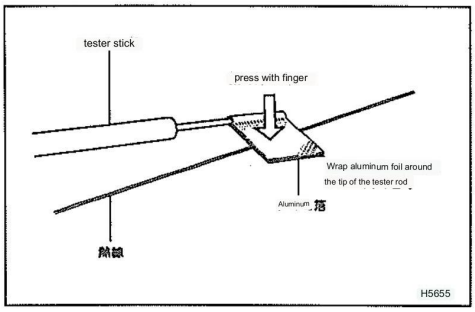
TG048500

Printed hot wire inspection and correction

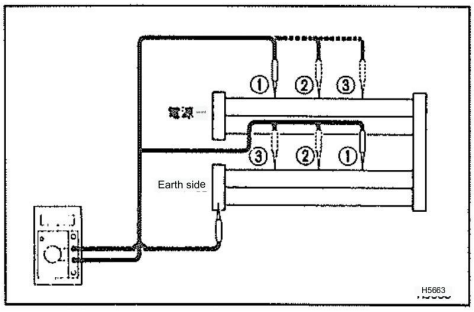
注意 • When cleaning dirt on the glass with a cloth, use a dry, soft cloth and wipe in the direction of the heat rays to avoid damaging the heat rays. Ugh.

• Do not use general detergents or glass cleaners.

Printed hot wire inspection



CAUTION: When measuring voltage, wrap aluminum foil around the tip of the tester rod to avoid damaging the hot wire, and check while placing the aluminum foil on the hot wire.



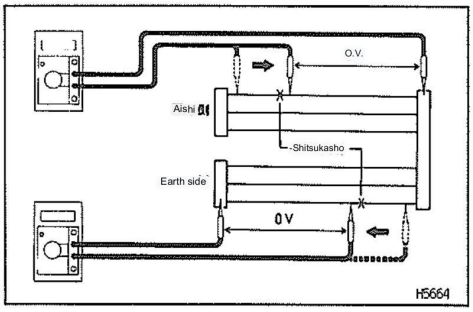
1 Wire inspection

(1) Turn on the ignition switch.

(2) Turn on the defogger switch. Standard:

(3) Measure the voltage at three locations.

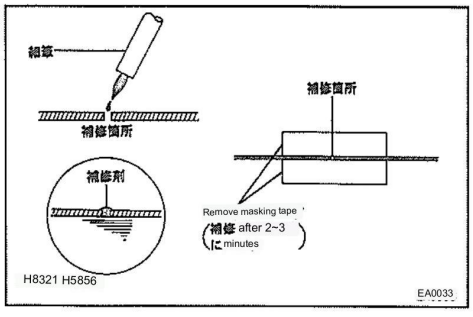
The voltage decreases each time you measure ①.②.③.



(4) Place the tester rod on the defective wire and move it to find the broken wire (changes to OV).

).

16



Printed heat wire correction

(1) Clean the broken wire with white gasoline.

(2) Stir the repair agent thoroughly, then apply a small amount with a fine brush and apply it to the repaired area.

Cloth.

(3) If the repair area is long, apply masking tape and apply repair agent.

do.

(4) Peel off the masking tape after 2 to 3 minutes of repair. Do not

注意 turn on electricity for 24 hours after repair.

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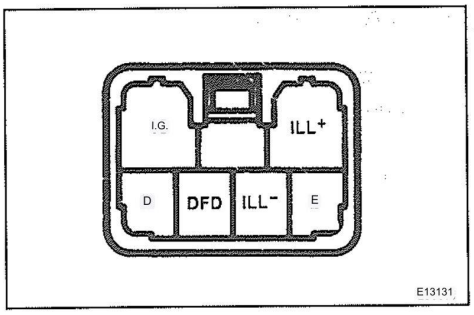


Individual inspection

front window defogger switch

1, Voltage check

(1) Check continuity and voltage between each terminal and body ground according to the following inspection order.

Inspection to. In addition, the "disconnected vehicle side" in the table indicates the connection of the connector.

``connection'' indicates that the

"Connected to the connector" means to inspect the connector with it connected.

standard

order	Measurement connector conditions Terminal Item			point 検 条 subject	lid Koto	Problem location in case of non-standard
1	Connection disconnected vehicle side	E	guidance	Always	導通 can be	Vehicle side
2		IL	L conductor normal time		With guidance	
3		I.G.	Voltage	IG switch OFF→ON	DV approx. 12V	
4		ILL+		Voltage Light control S/W OFF→ON	OV → approx. 12V	
5	connector connection	D	Densho	IG switch ON Mirror heater switch ON	Approximately 12V → 12~18 minutes OV →About 12V	switch
				IG switch ON → Mirror heater switch ON → Switch OFF	Approx. 12V0V → Approx. 12V	
6		DFD	Densho	IG switch ON Front defogger switch ON	Approx. 12V → 12~18 minutes OV → Approx. 12V	
				IG switch ON Front defogger switch ON → switch OFF	Approx. 12V → OV → Approx. 12V	

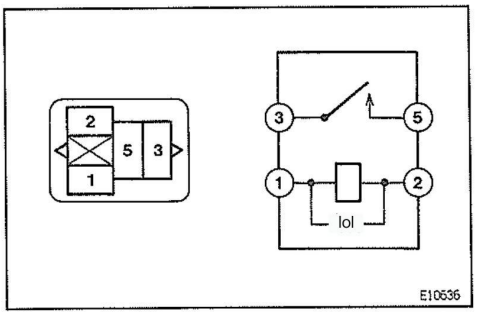
JB2838

rear window defogger switch

<Reference> Check the continuity and voltage of the rear window defogger switch

(see ``Heater & Air Conditioner'' - ``Individual Inspection'')

16



Defogger relay (front, rear)

1 Continuity check

(1) Check continuity between each terminal of the connector.

Standard Between 1 terminal and 2 terminals...Continuity

exists Between 3 terminals and 5 terminals...No continuity

(2) When battery voltage is applied between 1 and 2 terminals of the connector,

Check continuity between terminals 3 and 5. Standard

guidance available

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T0048268

ホーン

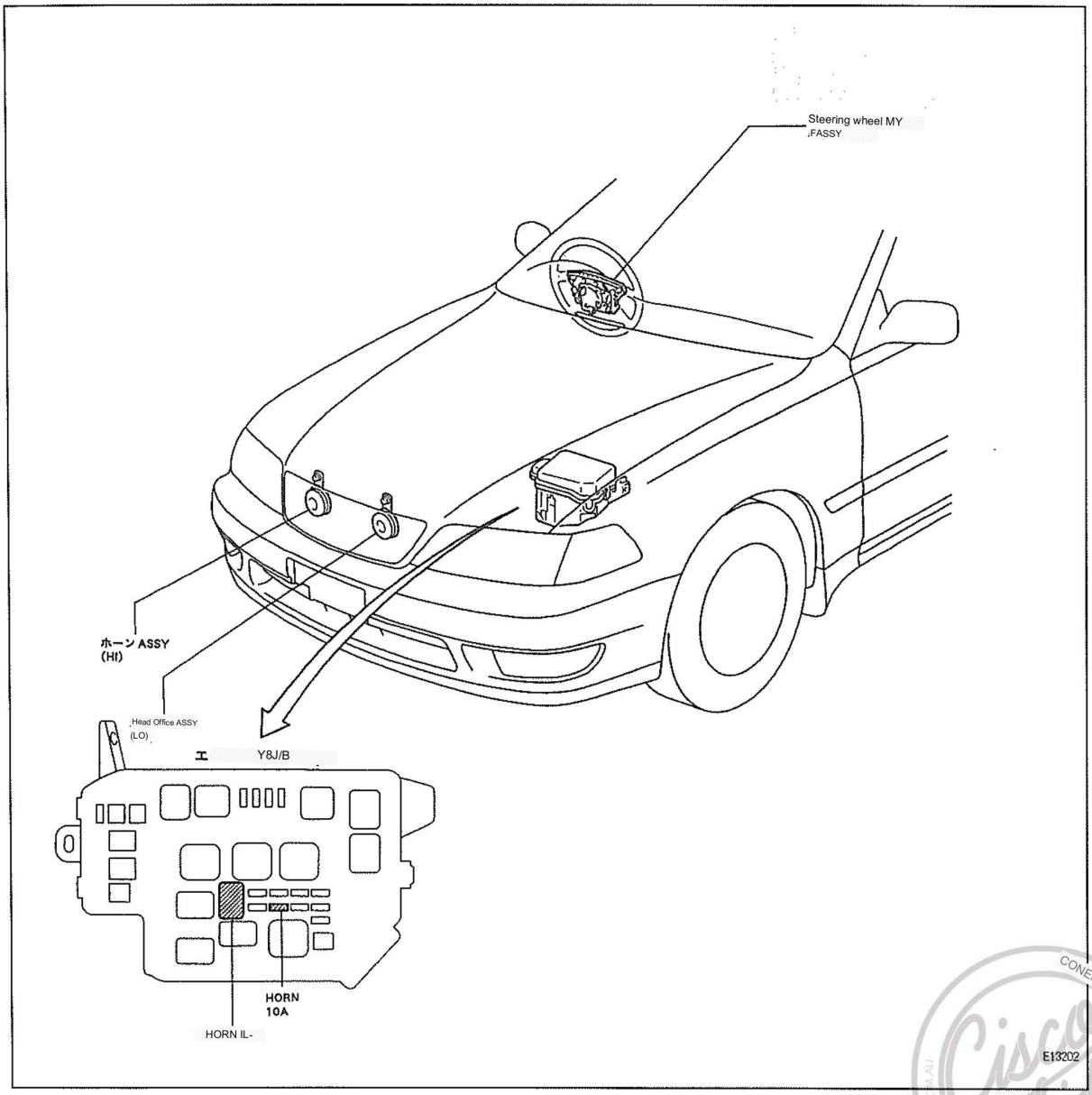
Preparation items

instrument

	09082-00012	toyota electrical tester	For inspection of each part

T0048270

Parts layout diagram



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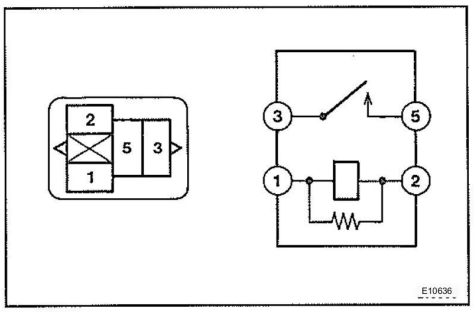

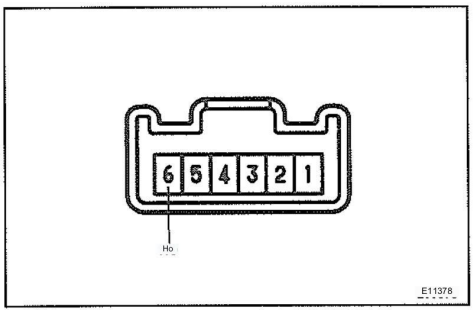

Individual inspection

horn relay

1 Continuity check

(1) Check continuity between each terminal of the connector. Standard

between 1 terminal and 2 terminals...with conductor

Between 3 terminals and 5 terminals...no continuity

(2) 1 terminal When battery voltage is applied between 2 terminals, 3 terminals 5 standard

Check continuity between terminals.

with conductor

horn switch

1 Voltage check

(1) Measure the voltage between the HO terminal of the combination switch

connector and body ground.

Standard value 10~14V

2 Continuity check

(1) Disconnect the combination switch connector and check continuity

between the HO terminal of the switch side connector and body ground. Standard

Continuity exists when the switch (horn button) is pressed

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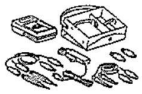
T0040227

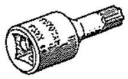
★Cruise control

Preparation items

soup bowl

	09082-00012	toyota electrical tester	For inspection of each part
	(09083-00060)	mini test lead	For computer inspection
	09843-18020	Diagnosis check wire	For diagnosis inspection
	09991-50100	Toyota Diagnosis Reader Set	For reading diagnosis codes
	09991-50320	Program IC card Engine system 3	For reading diagnosis codes
oscilloscope		20501	For waveform inspection

tool

	09042-00010	Torx socket wrench (T30)	Cruise control switch removal/removal

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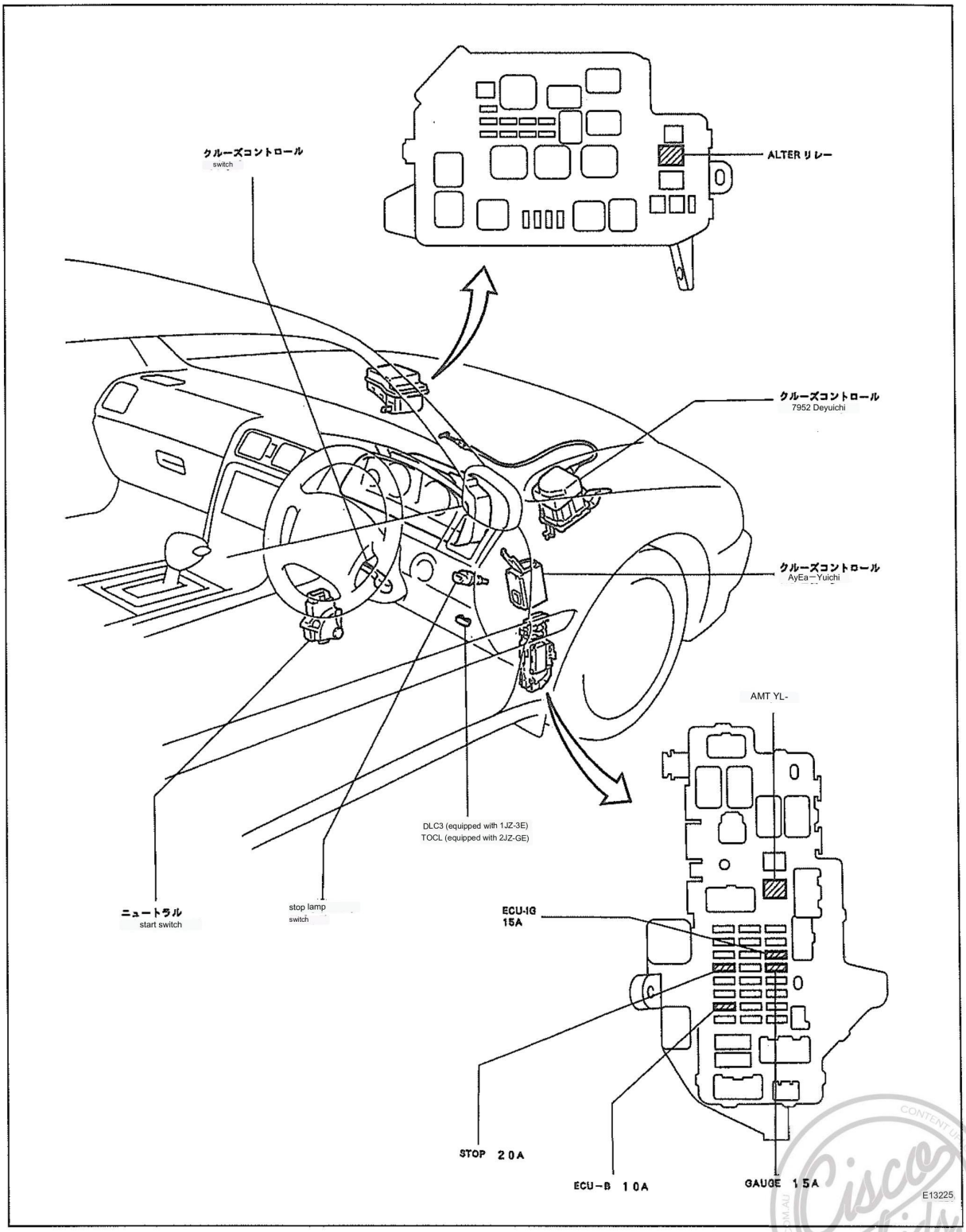
T0048220

Parts layout diagram



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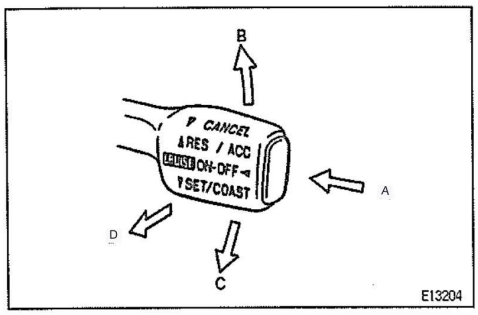
T0048032



Functional check

	Points of interest	Inspection details
Running inspection	1 cruise control set	(1) Turn on the cruise control main switch. (2) Lower the vehicle to the C side while driving at a speed of approximately 40 to 100 km/h. (3) Check that the vehicle runs at the desired speed when you release it. <Reference> Cruise control will be canceled if the vehicle speed drops approximately 16 km/h from the set speed while driving.
	2 speed increase set	(1) Set to desired vehicle speed. (2) Continue to increase speed while raising to side B, and check that the vehicle is running at the same speed as when you release your hand. <Reference> High speed limit...Do not accelerate over approximately 100km/h. (3) Check that the speed increases by about 1.5km/h when you move the car to the B side for a moment and immediately release it. (Tap up function)
	3 reduction set	(1) Set to desired vehicle speed. (2) Continue to decelerate while lowering to the C side, and check that the vehicle is running at the same speed as when you let go. <Reference> Low speed limit...Automatically cancels when the speed drops below approximately 40km/h. (3) Check that if you momentarily lower it to the C side and release it immediately, it will decelerate by approximately 1.5km/h. (tap down function) NOTE It automatically deactivates when the vehicle speed drops below approximately 40km/h.
	4 Cruise control release	(1) Set cruise control. (2) Check that the vehicle returns to normal running when any of the following operations are performed. ①Press the brake pedal. ② Move the shift lever to a position other than D. ③ Turn off the cruise control main switch. ④Pull the cruise control switch to the D side.
	5 Return to set speed before release	(1) Set cruise control. (2) Perform one of the following operations to cancel cruise control. ①Press the brake pedal. ② Move the shift lever to a position other than D. ③ Pull the cruise control switch to the D side. (3) After raising the cruise control switch to side B while the vehicle speed is 40km/h or higher, check that the vehicle speed returns to the one before release. Caution: Once the vehicle speed drops below approximately 40 km/h, it will not recover.
cruise control Switch inspection	1 Cruise control main switch	(1) Turn on the ignition switch. (2) Check that the CRUISE indicator lamp in the meter lights up and goes out when A is turned ON and OFF. (3) When the ignition switch is turned from ON to OFF while the CRUISE indicator lamp is on, check that the CRUISE indicator lamp is off.
	2 Cruise control switch	(1) Check that each side operates smoothly on B, C, and D sides. (2) Check that it returns to its original position when you release your hand.

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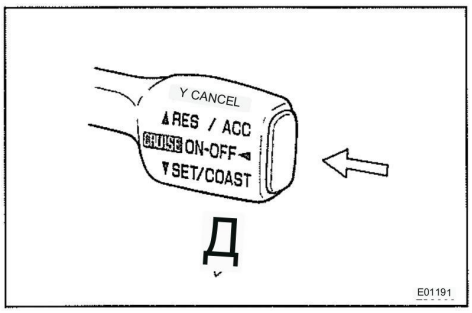

Input check

(reference) The cruise control computer allows you to check the circuits between each switch and the computer by checking the blinking indicator lamp in the combination meter. However, the indicator lamp will not work under the following operating conditions if its circuit is normal.

Output the code only if the

1 Ignition switch ON

(For inspection of No.1, No. 2, No.3)

2 Engine start (For inspection of No.4)

3 code reading

(1) Hold the cruise control switch in the SET/COAST or RES/ACC position.

(2) Turn on the main switch and hold the state in (1) for more than 3 seconds. (3) CRUISE indicator lamp in the combination meter

が Make sure it blinks 2 or 3 times.

(4) Perform each input operation and read the code.

<Reference> Display code No. 4 is displayed when all release switches are OFF.

conduct.

· If you turn on (press) the main switch again during diagnosis, a code will Stop power.

appear. · If an error occurs during diagnosis, the CRUISE indicator light will appear. flash the lamp.

No	diagnosis system	Input operation	Display code (indicator lamp blinking cycle)
1	SET / COAST switch system	SET/COAST switch ON	lit / lights out
2	RES/ACC switch system	RES/ACC switch ON	lit / lights out
3	Each release switch system	Turn on one of each cancel switch ①CANCEL switch ②Stop lamp switch ③Inside neutral start switch D Range shift position switch ON→OFF	turn on / turn off
4	Vehicle speed signal system	Runs or stops at approximately 40 km/h or less	lit / lights out
		Driving at approximately 40 km/h or more	turn on / turn off

JB3552

4 Ignition switch OFF

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Cruise control cable inspection and adjustment

1 Check cruise control cable play

(1) Remove the actuator cover.

(2) Move the output pulley of the actuator toward you,

Check cable play.

Standard height 10mm or less

The output pulley is within the range where the throttle valve does not open.

Move it with.

2 Adjusting the cruise control cable free

play (1) Change the double nut position of the cruise control cable.

adjust.

T0049264

Troubleshooting How

to proceed with troubleshooting

1 Pre-inspection

2 Diagnosis check

3 Troubleshooting by diagnosis code

4 Troubleshooting by problem phenomenon

Pre-inspection

(1) Check that the actuator, accelerator wire, cruise control cable, and link ASSY are properly installed and that the wires and links are fully connected.	(4) Check that the connectors of the computer, actuator, main switch, control switch, vehicle speed sensor, and each cancel switch are firmly connected.
(2) Accelerator pedal, actuator, accelerator wire, crew Check that the movement of the control cable and link assembly is smooth. (3) Excessive play or tension in the cruise control cable link system Adjust so that it is not too much.	(5) When the ignition switch is ON and the parking brake is operated, check that the brake warning lamp in the combination meter lights (6) When the ignition switch is ON and the main switch is pressed, up. Check that the CRUISE indicator lamp in the combination meter lights up.

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Diagnosis check

<Reference> During cruise control driving, diagnosis detects abnormalities in the speed sensor circuit, cruise control actuator circuit, cruise control switch circuit, and cancel switch circuits by flashing the CRUISE indicator lamp in the meter. inform the driver. (For code number 42, auto-cancellation only) -

There are two ways to read the diagnosis code: ``Reading with the CRUISE indicator lamp'' and ``Reading with Diagnosis CONTENT reader.''

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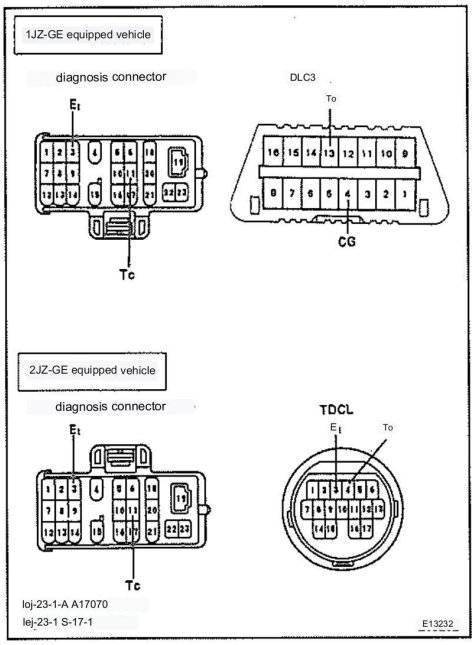


1 Diagnosis code reading

Reading by CRUISE indicator light

(1) Use the diagnosis check wire to check TDCL, DLC3 or

or the TE terminal or TCG

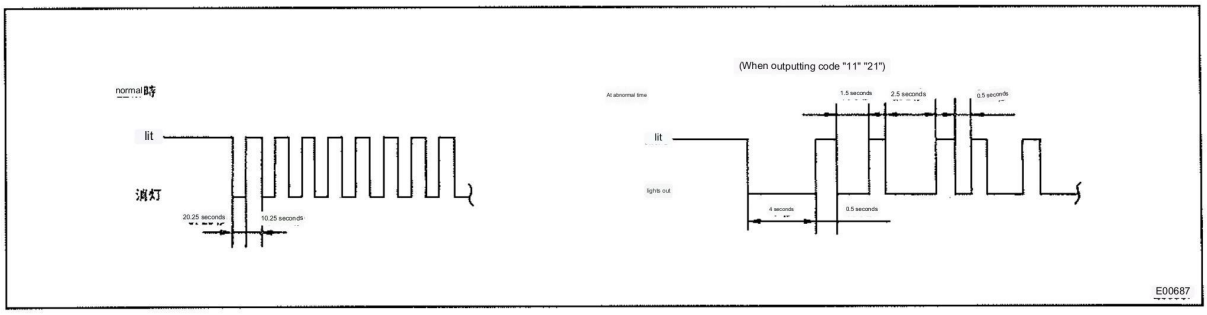
short-circuit between

注意 terminal of the diagnosis connector.

do not have.

(2) Turn on the ignition switch and turn on the CRUISE indicator.

Read the number of times the lamp blinks.



(3) If the diagnosis code number is displayed,

Check by troubleshooting by system code.

(4) Turn off the ignition switch.

(5) Remove the diagnosis check wire.

Reading by Toyota Diagnosis Reader

(1) Diagnosis using Toyota Diagnosis Reader

Read the code.

· Engine system code

1JZ-GE ----818

2JZ-GE……81C

2 Diagnosis code memory deletion

(1) After repairing the abnormality, do not remove the ECU-B fuse (10A) for more than 10 seconds.

Zuzu.

(2) After installing the fuse, confirm that a normal code is output.

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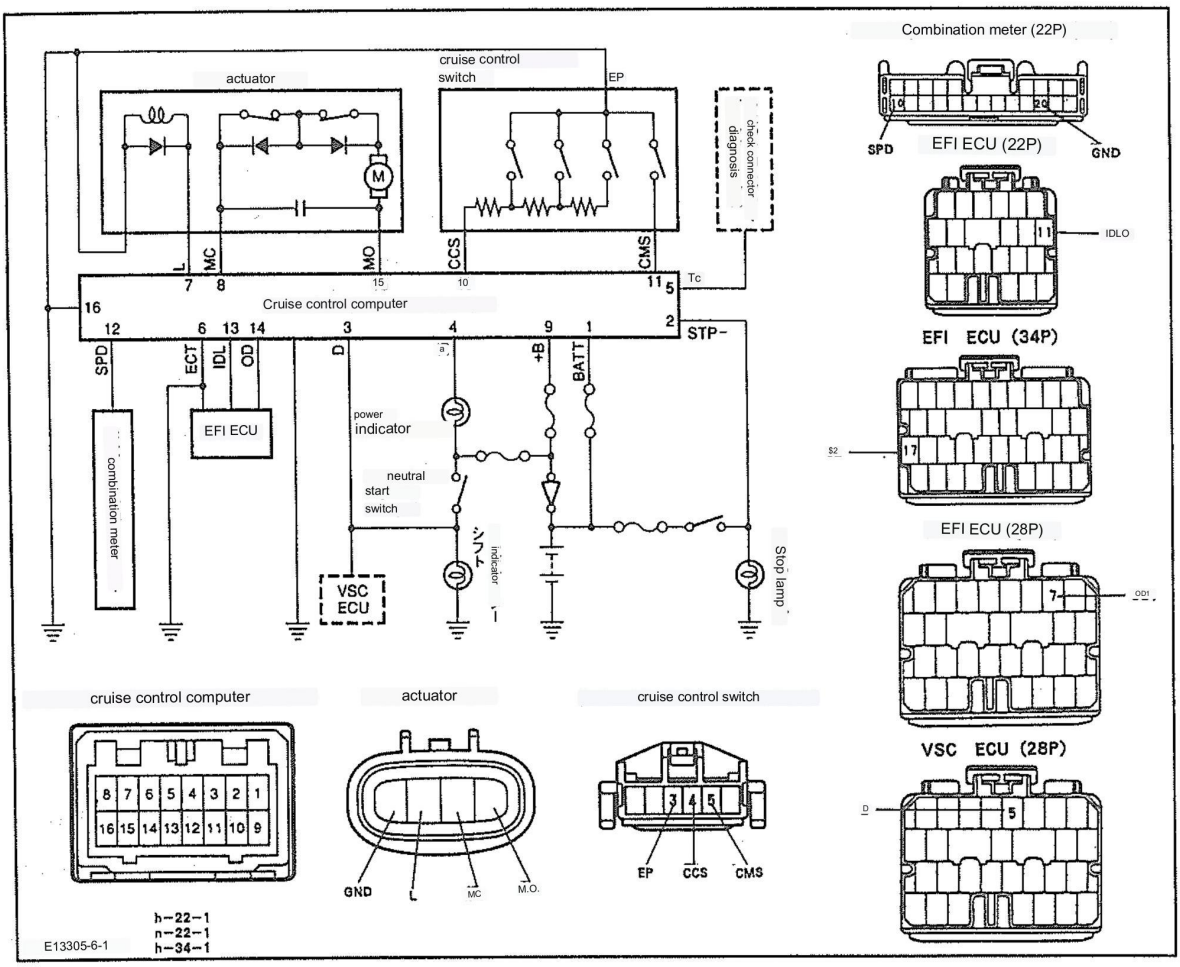
Troubleshooting by diagnosis code

cruise control control computer schematic



※ Inspection items are performed in numerical order.

Diagram code number	Diagnostic items ①Diagnostic conditions ②Abnormal condition 3 Indicator blinking cycle	Inspection conditions	Inspection items
11	Motor output overcurrent ① Cruise control is in progress ② Overcurrent flows to the motor lit lights out	Ignissi switch 2 CH OFF	1. Inspect the terminal resistance for the actuator side motor. Measure the resistance between MO-MC terminals. Standard value 4.2Ω or more Measurement cannot be performed if the link is at MAX or MIN. Check the wiring harness continuity between the cruise control computer and actuator. Criteria: There is no thin layer between the wire harness (MO, MC) and body ground, or the wire harness (MO, MC). 3. After connecting the connector, erase the diagnosis code (see "Diagnosis inspection" P16-117) 4. If the problem recurs after checking the connection, replace the cruise control computer.

J3063

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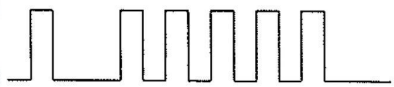
Diagram code number	Diagnostic items ①Diagnostic conditions ②Abnormal condition ③Indicator blinking cycle	Inspection conditions	Inspection items
12	Magnetic clutch output current or magnet Clutch system disconnection ① Cruise control in progress ② Overcurrent has flowed to the magnetic clutch, or Disconnection of the magnetic clutch system circuit ③ lit lights out 	Ignissi ON switch OFF	1. STOP fuse blown 2. Inspection of actuator side magnetic clutch terminal resistance Measurement of resistance between L and GND terminals Standard value 34.7~424 Ω 3. Cruise control computer ~ actuator Standards for checking the continuity of wire harness between cables Actuator side There is a conductor between the L terminal and the computer side L terminal. Actuator side Between GND terminal and computer side L terminal... Continuity exists Actuator side L terminal to body ground ····· No continuity Actuator side Between GND terminal and body ground ····· No continuity Computer side Between L terminal and L terminal · · · · No continuity
		—	4. Clear the diagnosis code after connecting the connector (Refer to "Diagnosis Inspection" P16-117) 5. If the problem recurs after performing a function check, check the cruise control. roll computer replacement
14	mechanical failure ① Cruise control in progress ② Actuator lock (closed side) ③ lit [Lights off J.M.	Ignition CONSwitch CH OFF	1. Actuator link lock inspection criteria Connect the battery to L and GND of the actuator. Apply voltage to lock the link. 2. Actuator link operation check ① Connect the +, GND and MC to actuators L and MO. add battery voltage Reference link moves to open side ②Actuator L and MC + GND and MO Add battery voltage Reference link moves to the closing side 3. Cruise control computer ~ actuator Wire harness continuity check Reference actuator side MO terminal to computer side MO terminal...continuity Actuator side Between MC terminal and computer side MC terminal... With conductor
		—	4. Clear the diagnosis code after connecting the connector (Refer to "Diagnosis Inspection" P16-117) 5. If the problem recurs after functional inspection, replace the cruise control computer.
15	Motor side open failure ① Cruise control in progress ② Motor closed side open motor output circuit disconnection ® lit lights out 	Ignissi switch CH OFF	1. Checking the resistance of the motor in the actuator Resistance measurement between MO~MC Standard value 4.2 or more Measurement is possible when the link is at the MAX, MIN position. do not have 2. Cruise control computer ~ actuator Wire harness continuity check between terminals standard Between the MO terminal on the actuator side and the MO terminal on the computer side...With conductor Between the MC terminal on the actuator side and the MC terminal on the computer side...With conductor
		—	3. Clear diagnosis code after connecting connector (Refer to "Diagnosis Inspection" P16-117) 4. If the problem recurs after performing a function check, check the cruise control. roll computer replacement

JB3069

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[Conveyance box]

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Diagram code number	Cutting item ①Diagnosis conditions ②Abnormal condition Indicator blinking cycle	Inspection conditions	Items
21	Vehicle speed disconnection ①Cruise control in progress ②Vehicle speed signal is not input from the speed sensor ③ lit Lights off	See table below	See table below <Reference> 1. Inspection of vehicle speed signal system input 2. Connect the oscilloscope waveform at a vehicle speed of 60km/h between the SPD terminal and GND terminal on the cruise control computer side. Observation 3. When the vehicle speed is 60 km/h between the SPD terminal and GND terminal on the meter side. Observe the oscilloscope waveform 4. Speedometer ~ Cruise Control Computer Wire harness continuity check between terminals
23	Vehicle speed signal abnormality ① During cruise control control ② Vehicle speed signal pulse interval is abnormal ③ lit lights out		

<Reference> Proceed with troubleshooting in order of No.

No	work title	Tips and tricks • standard	Division Fruit
1	Input check	(Refer to "Input Check" P16-116)	Go to OK-8 NG—2 へ
2	Vehicle speed waveform inspection	Cruise control computer SPD terminal and GND Connect an oscilloscope between the terminals and take the waveform when the vehicle speed is 60km/h inspect (Refer to "Single Unit Inspection" Waveform 2 P16-135)	Go to OK-8 Go to NG-3
3	voltage point	Change the voltage between the 4P terminal and E1 terminal of the combination meter to OK-4. Inspection <"Meter & Gauge" - Refer to "Speed Sensor Inspection" P16-97)	NG-Speed sensor inspection ("Meter & Gauge" - (See "Speed sensor inspection" P16-97)
4	IG switch OFF when vehicle is stopped		to 5
5	Disconnect the combination meter and cruise control computer connector Go to 6		
6	Wire harness continuity check	Is the continuity of the wiring harness between the combination meter and cruise control computer normal? Three grains Between the SPD terminal on the cruise control computer vehicle side and the SPD terminal on the combination meter vehicle side...There is conduction. Cruise control computer vehicle side SPD terminal ~ Bodeas· No ·····thin road	Go to OK-7 Repair or replace the NG-to- cruise control computer speedometer wire harness.
7	Connect the combination meter and cruise control computer connector Go to 8		
8	Clear the diagnosis code	(Refer to "Diagnosis Inspection" P16-117)	9 へ
9	Perform a driving check to see if the symptoms recur.	(Refer to "Functional Inspection" P16-115)	Reproduced - Cruise control computer replaced Go to Reproduction-10
10	Check again using reproduction method	(Refer to "Review" - "Reproduction method" P0-11)	

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Diagram code number	Diagnostic items ①Diagnosis conditions ②Abnormal condition Indicator blinking cycle	Inspection conditions.	Point 検 item
32	Control switch ground short ① Turn on the ignition switch ② Cruise control switch signal short-circuited. ③ lit lights out	Ignition switch ON	1. Perform input inspection No.1~No.3 (Refer to "Input Check" 16-116)
		Ignition switch OFF	2.Inspection of cruise control switch alone (Refer to "Individual Inspection" 16-132) 3. Check continuity between spiral cable terminals ("Single unit inspection" 16-133) 4. Continuity check between cruise control switch and wire harness Check for short circuit in wire harness between control switch and cruise control computer Yes Semi- CCS terminal to body ground ····· Not suitable CCS terminal to ECC 間 ····· No thin
		—	5. Erase the diagnosis code after connecting the connector (see "Diagnosis check" P16-117) 6. Perform a function check and if the problem recurs, turn the cruise control roll computer replacement
41	Continuous energization of motor opening and closing ① Ignition switch ON ② Motor output is continuously passed to the speed increasing side. ③ lit lights out	cruise control Driving (vehicle speed approx.) 40~100km/h)	1.If the problem recurs after performing a function check, please check the cruise control. roll computer replacement
42	Mechanical failure at low voltage ① Cruise control is in progress ② Motor does not operate due to low battery voltage ③ lit lights out MUL	cruiseco 1 control Driving (car approx. 40~~100 km/h)	Charging system inspection Connect an oscilloscope to the B terminal of the cruise control computer and check if the battery voltage is high during driving inspection *Conducted Check that it does not fall below 10V Standard 10~16V at maximum electrical load (wiper operation, lamp lighting, air conditioner HI, etc.)
		—	2. Wire harness and battery system inspection standard Check that the contact resistance is not large due to poor terminal caulking,
51	Idle ON failure ① During cruise control control 2 Throttle position sensor idle signal abnormality ③ lit lights out	corrosion, etc. Ignition Control switch OFF	1. Cruise control computer ~ Throttle box There is no short circuit in the wire harness between position sensors. Standard IDL terminal to body ground... No conductivity
		—	2. Erase the diagnosis code after connecting the connector (see "Diagnosis check" P16-117) 3. Perform a function check and if the problem recurs, replace the cruise control computer.

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*If the vehicle speed decreases while climbing a slope, etc., you can reset the settings and continue driving.

(This is not a defect)

<reference> If something other than the list is displayed, turn off the ignition switch once. Check that the system returns to normal after turning off the switch. If it does not return to normal, use the cruise control

Replace pewter.

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Troubleshooting by problem phenomenon

<Reference> NO Proceed with troubleshooting in order.

1	Main switch won't turn on

Na	work title	Inspection procedures/standards	result
1	IG switch when vehicle is stopped ON		Go to 2
2	Checking the voltage of the CMS terminal of the cruise control computer	Is the voltage between the CMS GND terminals of the cruise control computer normal? Standards Do not press the main switch 10~14V Press the main switch...2V or less	OK-13 to NG-3 へ
3	IG switch OFF when vehicle is stopped		to 4
4	Disconnect cruise control computer connector		to 5
5	Wire harness continuity check	Is continuity between the vehicle side CMS terminal of the cruise control computer and body ground normal? Criteria ① When the main switch is not pressed...No continuity ② When the main switch is pressed ...There is a guide path	Go to OK-6 NG—9 へ
6	fuse inspection	Is the ECU-IG fuse normal?	Go to OK-7 NG-fuse replacement
7	cruise control computer Voltage check	Cruise control computer B terminal Is the voltage between the GND terminal normal? Standard value 10~16V	To OK-12 NG… BA
8	Wire harness continuity check	Cruise control computer BOK - battery replacement Terminal Is the wiring harness between the battery terminals properly connected? Between cruise control computer B terminal and battery terminal...with conduction between cruise control computer GND terminal and body ground...no continuity	NG - Wire harness between cruise control computer and battery Repair or replace
9	Disconnect the control switch connector		With the diagnosis result of 6 If ① is NG, go to 10 If ② is NG, go to 11
10	Control switch continuity check	Control switch CMS terminal ECC terminal OK - Is the cruise control computer terminal conduction normal? Standard When the main switch is not pressed ...No continuity Is	Between the controller and control switch Wiring harness repair or replacement NG-control switch replacement
11	Wire harness continuity check	the wire harness continuity between the cruise control computer CMS terminal and the control switch CMS terminal and between the vehicle side ECC terminal, body, and ground normal? Criteria Yes	OK - Replace control switch NG - Repair or replace wire harness between cruise control switch and control switch
12	Perform a driving check and check if the symptom recurs (see "Functional Check" (P16-115))		Reproduced - cruise control computer replaced Non-reproduced - Go to 13
13 Check again using the reproduction method (see "Theory" "Reproduction method" (PO-11))			

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2	Unable to set (The indicator lamp lights up when the main switch is first turned

on) If the indicator lamp flashes during the setting operation, refer to "Troubleshooting by Diagnosis Code"
If the indicator lamp is off during the set operation...go to 1 If.
the indicator lamp remains lit during the set operation...go to 2

Na	work title	Inspection procedures/standards	result
1	Perform running inspection (see "Functional inspection" P16-115)		To OK-15 NG-Cruise control computer Replacement
2	Input check (Refer to "Input check" P16-116)	Are the input check results below normal? ① Signal after startup Standard ② lighting Signal while SET/COAST switch is ON	OK to -14 NG－3へ
3	Turn off the IG switch when the vehicle is stopped.		If ① is NG in the diagnosis result of 2, go to -4. If ② is NG, go to 12.
4	Disconnect the control switch connector.		to 5
5	Control switch continuity check	control switch CCS terminal Is continuity ↔ ECC between terminals normal? No reference continuity	OK-6~NG- control switch replacement
6	Disconnect cruise control computer connector		to 7
7	Wire harness continuity check	Control switch CCS terminal Loose control computer Check whether the wiring harness between CCS terminals is normal. Between reference CCS terminal and body ground...No conductor	OK - Go to 8 NG - Repair or replace control switch to cruise control computer wiring harness.
8	Disconnect the stop lamp switch connector		9へ
9	Continuity check of stop lamp switch	Is the continuity between each terminal normal when the stop lamp switch brake pedal OK-10 is not pressed? Criteria B terminal L terminal...No conductor	NG-stop lamp switch replacement
10	Disconnect cruise control computer connector		Go to 11
11	Repair or replace the wire harness between the stop lamp switch and the cruise control computer		to 14.
12	Disconnect the cruise control computer connector and control switch connector		to 13
13	Wiring harness continuity check	Cruise control computer car Go to OK-14 Both sides CCS terminal ~ Control switch Both sides CCS terminal and control switch Vehicle side Is continuity between ECC terminal ~ Body ground normal? Standards apply.	Repair or replace the wiring harness — between the NG-cruise control computer and the control switch.
14	Perform a driving check and check if the symptom recurs (see "Functional Check" P16-115)		Not reproduced...Go to 15 Recurred... Cruise control computer replaced
15 Check again using the reproduction method (see "Review" - "Reproduction method" PO-11)			

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3	Cancel while driving at constant speed (if the indicator lamp goes out)

No	work title	Inspection procedures/standards	result
1	IG switch OFF when vehicle is stopped		Go to 2
2	fuse inspection	Is the ECU-IG fuse normal?	OK to -3 NG-fuse replacement
3	IG switch ON		to 4
4	cruise control computer Electric machine inspection	Go to OK -8 on the cruise control computer Is the voltage between B terminal and GND terminal normal? Standard value 10~18V	NG-5
5	IG switch OFF		to 6
6	Disconnect battery terminals and cruise control computer connectors		to 7
7	Wire harness continuity check	Cruise control computer wire harness between B terminal and battery terminal Is the continuity between terminal standard Cruise control computer B and battery terminal normal? Between the terminal and battery terminal... cruise control computer Continuity exists Between GND terminal and body ground... No continuity	OK - after battery replacement NG - cruise control computer ~ battery wiring harness repair or replacement
8	Perform a driving check and check if the symptom recurs (see "Functional Check" P16-115)		再現有…Cruise control computer replacement Not reproduced…… Go to 9
9	Check again using the reproduction method (see "Theory" and "Reproduction Method" PO-11)		

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4	Cancel while driving at constant speed (if the indicator lamp remains lit)

No.	work title	Inspection procedures/standards	result
1	Input inspection (“Input inspection” P16-116)	Is the signal normal after starting the input check? Criteria	OK-9 NG-2 ^
2	IG switch OFF when vehicle is stopped		to 3
3	Disconnect the control switch connector Disconnect the stop lamp switch connector		4 ^ to 8
4	Control switch continuity check	Continuity between each terminal of the control switch is Is it normal? Standard: No continuity between CCS terminal and ECC terminal	Go to OK-5 NG control switch replacement
5	Wire harness continuity check	Is continuity between control switch CCS terminal and body ground normal? Criteria: No continuity	Go to OK-6 Wire between NG-control switch and cruise control computer Harness repair or replacement
6	Disconnect cruise control computer connector		7^
7	Wire harness continuity check	Stop lamp switch STP terminal ~Po OK-2 fart Is continuity between earth and earth normal? Criteria: No continuity	NG-Cruise control computer stop lamp switch question Ear harness repair or replacement
8	Stop lamp switch continuity check	Is the continuity between the terminals normal when the stop lamp switch brake pedal OK-9 is not pressed? Standard Between B terminal and L terminal...No continuity	NG-stop lamp switch replacement
9	Perform running inspection (see “Functional inspection” P16-115)	Perform a driving check and cancel while driving at a constant speed.Basic: Do not cancel while driving at a constant speed.	Reproduced Cruise control computer replacement Non-recurrence...go to 10
10	Check again using reproduction method (“Editorial”)	"Reproduction method" (see PO-11)	

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5	Significant drop in vehicle speed when set (-3km/h or more)

No	work title	Inspection procedures/standards	result
1	IG switch OFF when vehicle is stopped		Go to 2
2	Control cable installation inspection	Is the installation condition of the cruise control cable normal? Standard value 10mm or less	Go to OK-3 NG-control cable installation adjustment
3	Control cable play check	For play in the cruise control cable, go to OK-4 Is it normal?	NG play adjustment
4	IG switch ON when vehicle is stopped		to 5
5	cruise control computer Voltage check	Cruise control computer OK - To 13 Is the voltage between the terminals normal? Standards Between BATT terminal → GND terminal 10~16V IDL terminal Between GND terminal ① When you press the accelerator pedal...10~16V ② When not pressing the accelerator pedal...3V or less	NG-If ① is NG...Go to 6 If ② is NG...Go to 10
6	IG switch OFF		to 7
7	fuse inspection	Are fuse ALTER, AM1, ECU-B normal? Go to OK-8	NG-fuse replacement
8	Disconnect cruise control computer connector		Go to 9
9	Wire harness continuity check	Battery ~ Cruise control combo Standard: Cruise control computer vehicle side BATT terminal Body ground...No continuity Between battery and cruise control computer vehicle side BATT terminal...Continuity present	Go to OK-13 NG-battery cruise control Repair or replace the computer-to-computer wiring harness
10	IG switch OFF Disconnect cruise control computer connector		Go to 11
11	Wire harness continuity check	Wire between throttle position sensor and crew OK-12 Control computer Wire between NG and throttle position sensor and harness Is continuity between the harness normal? Semi-IDL terminal Between body ground...No continuity IDL terminal Between IDL terminal... There is continuity	Loose Control Computer Wire Harness Repair or Replacement
12	Throttle position sensor inspection "JZ series engines" - "Main throttle position sensor" P2-49 ("JZ series engines" - "Sub throttle position sensor" See P2-51)		Go to OK-13 NG-Throttle position sensor replacement
13 Perform a driving check and check if the symptom recurs (see "Functional Check P16-115")			Reproduction cruise control controller Pewter exchange non-recurrence... Go to 14
14 Check again using the reproduction method (see "Review" "Reproduction method" P0-11)			

16

steamed noodles
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6 Hunting (vehicle speed is unstable)

Na	work title	Inspection procedures/standards	result
1	IG switch OFF when vehicle is stopped		Go to 2
2	Control cable installation inspection	Is the cruise control cable properly installed?	Go to OK-3 NG-control cable installation adjustment
3	Control cable play check	cruise control cable play Normal addition standard value 10mm or less	To OK-4 NG Play adjustment
4	Disconnect cruise control computer connector		5^
5	Vehicle speed waveform inspection	cruise control computer of Connect an oscilloscope between the SPD terminal and the GND terminal, and check the vehicle speed waveform at a vehicle speed of 60km/h (Refer to "Individual inspection" waveform 2 P16-135)	Go to OK-7 To NG-6
6	Speed sensor check	Is the speed sensor normal? ("Meter & Gauge") - "Speed sensor inspection" (See page 16-97)	To OK-7 NG-Speed sensor replacement
7	Perform a driving check to see if the symptom recurs. (Refer to "Functional Inspection" P16-115)		Reproduced...Cruise control computer replaced Not reproducible...Go to 8
8	Check again using reproduction method (Refer to — "Review" "Reproduction Method" P0-11)		

7 Hunting (when OD cuts and returns are repeated frequently)

No	work title	Inspection procedures/standards	result
1	Cruise control computer voltage check	Cruise control computer OD terminal to GND terminal voltage when driving at constant speed Is it normal? 基 準 OD走When running•••••+B-2V or more When running with OD cut...0.5V or less	Go to OK-5 To NG-2
2	IG switch OFF, disconnect cruise control computer and engine control computer connectors		to 3
3	Wire harness continuity check	Cruise control computer~ Is the continuity of the wiring harness between the engine control computers normal? 基 quasi Vehicle side OD terminal Body ground connection...No continuity or replacement	Go to OK-4 NG-Cruise control computer Repair of the wiring harness between the engine control computer and the engine control computer
4	Wire harness continuity check	Wire harness between cruise control computer and ECT solenoid No.2 Is continuity normal? Standard Between vehicle side ECT terminal and body ground...Continuity exists	OK - go to 5. Repair or replace the wire harness between NG and cruise control computer to ECU solenoid No.2.
5	Perform a driving check and check if the symptoms recur. (Refer to "Functional Inspection" P16-115)		Reproduced... Replace the cruise control computer Not reproducible...Go to 6
6	Check again using reproduction method (Refer to "Review" - "Reproduction Method" P0-11)		

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8	Hunting (occurs only on downhill roads)

Na	work title	Inspection procedures/standards	result
1	Turn off the IG switch when the vehicle is stopped.		_2^
2	Control cable installation inspection	Is the cruise control cable installed normally? Is it normal?	Go to OK-3 NG-control cable installation adjustment
3	Control cable play check	Cruise control cable play OK-4 NG Play Standard value 10mm or less	adjustment
4	IG switch ON		to 5
5	Cruise control computer voltage check	cruise control computer Is the voltage between IDL terminal and GND terminal normal? standard 値 When you press the accelerator pedal...10~14V When you don't press the accelerator pedal...3V or less	OK - go to 9 NG-6~
6	IG switch OFF cruise control computer disconnect the connector of		to 7
7	Wire harness continuity check	Engine control computer ~ Go to OK-8 Is the continuity of the wire harness between the cruise control computer IDL terminals normal? Standards continuity between IDL terminal and body ground. IDL terminal IDL terminal - Continuity exists	NG Repair the wire harness between engine control computer and cruise control computer, or replace if there is no
8	Throttle position sensor inspection ("JZ series engines" "Main throttle position sensor" P2-49 "JZ series engines" - "Sub throttle position sensor" See P2-51		Go to OK-9 NG-Throttle position sensor replacement
9	Perform a driving check and check if the symptom recurs (see "Functional Check" P16-115)		Reproduced.....Cruise control computer replaced 不Reproduced...Go to 10
10	Check again using the reproduction method (see "Review" - "Reproduction method" PO-11)		

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9	Cannot be canceled by coast, accelerator, resume or control switch

Na	work title	Inspection procedures/standards	result
1	Perform input inspection No.1~No.3 (Refer to "Input inspection" P16-116)		Go to OK-5 NG-2~
2	IG switch OFF Disconnect cruise control switch connector		to 3
3	Cruise control switch resistance check	Cruise control switch terminal Is the resistance normal? (Refer to "Individual Inspection" 16-132)	Go to OK-4 NG - Cruise control switch replacement
4	Spiral cable inspection	Is the continuity between the terminals of the spiral cable normal? (Refer to "Single unit inspection" P16-133)	OK -10~NG- Spiral cable replacement
5	fuse replacement	Is the ECU-IG fuse normal?	Go to OK-6 NG-Fuse replacement
6	IG switch ON		to 7
7	Cruise control computer voltage check	Is the voltage between the B terminal and GND terminal of the cruise control computer normal? Standard value 10~14V	To OK-10 NG-8
8	IG switch OFF, cruise control computer connector and pattie Remove the Lee terminal		Go to 9
9	Wire harness continuity check	Cruise control computer~ Is the continuity of the wire harness between the batteries normal? Standard B Terminal Battery Earth floor...Conducting path available GND terminal Between body and earth...Continuity available	OK Go to 10 after battery replacement NG - Repair or replace cruise — control computer ~ battery wiring harness
10	Perform a driving check and check if the symptoms recur. (Refer to "Functional Inspection" P16-115)		Reproduced...Cruise control computer replaced Non-reproduced...Go to 11
11	Check again using reproduction method (``Review") — "Reproduction method" (see page 0-11)		

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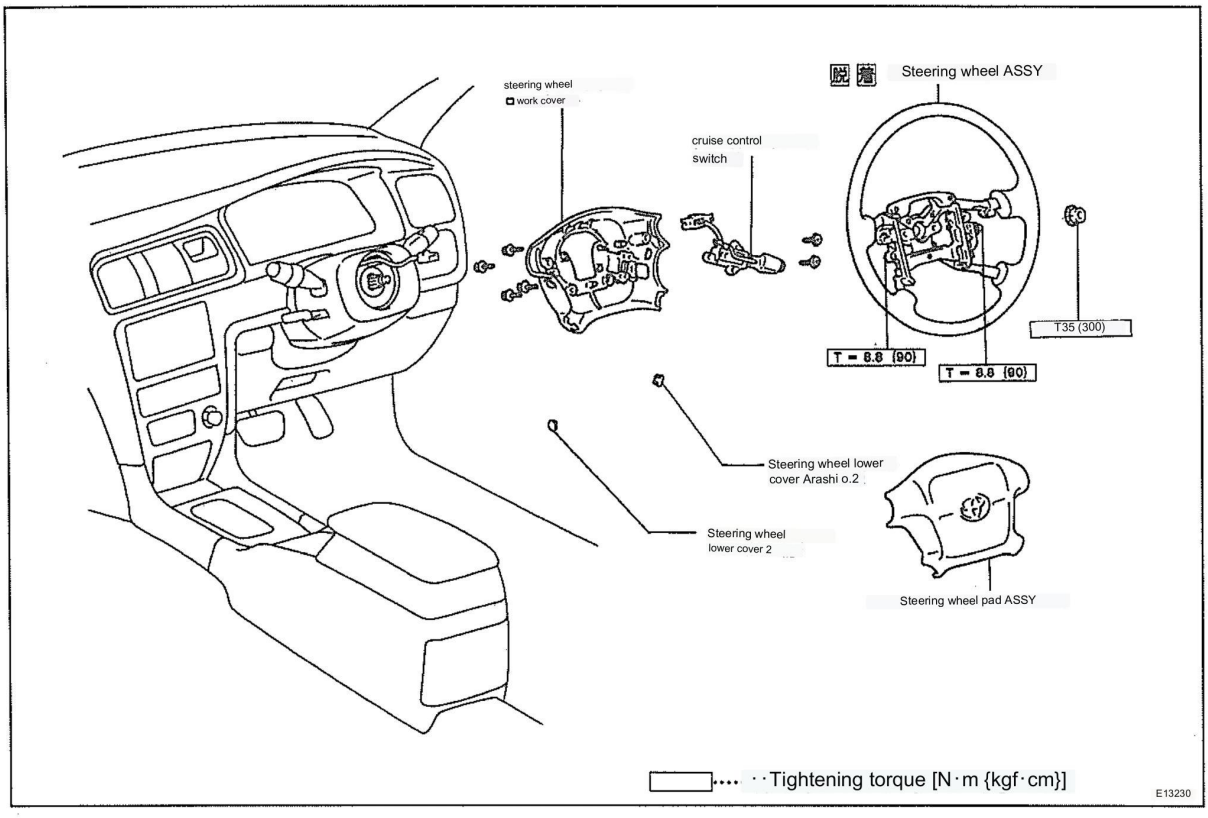
T0049235

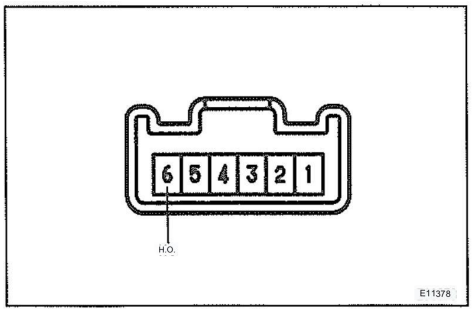
★Cruise control

When handling SRS airbags, be sure to follow the work precautions.
Do the work.

(Refer to "SRS Airbag" and "Precautions")

★Detachment configuration diagram





★Points to note when installing and removing cruise control

1 Steering wheel removal

(See "SRS Airbag" - "Steering Wheel & Pad")

2 Steering wheel lower cover removal

3 Removing the horn terminal

(1) Disconnect the horn connector HO terminal from the cruise control switch connector.

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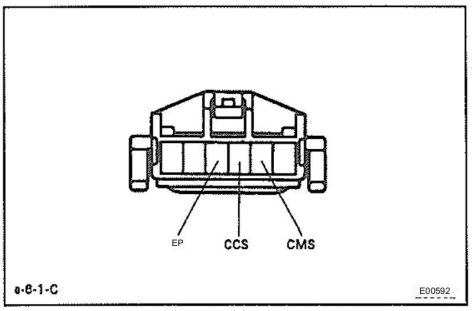


Individual inspection

cruise control switch

(1) Check continuity or resistance value between each terminal.

蓄 準 ○○Resistance ○Continuity

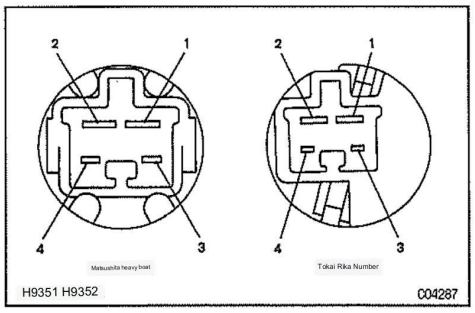
Terminal / symbol switch position	CMS	EP	CCS	Resistance value [Ω]
MAIN	○	-○		—
RES/ACC		○	-○	80~80
SET/COAST		○	○	180~220
CANSEL		○	○	400 ~ 440

JB3786

stop lamp switch

1 Continuity check

(1) Check continuity between each terminal of the connector.

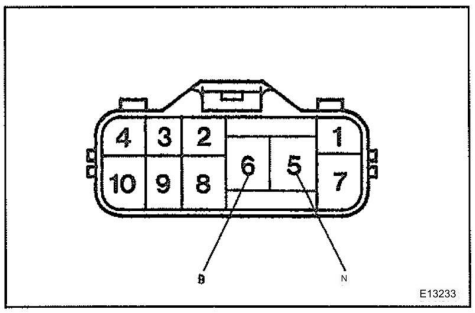


standard ○○ guidance available

Terminal symbol / conditions	1	2	3	4
don't hit the brakes			○	○
Press the brake pedal	○	○		

JA1058

neutral start switch



1 Continuity check

(1) Check that there is continuity between the NB terminals of the switch when the shift lever is set to N or P range, and that there is no continuity when the shift lever is set to other ranges.

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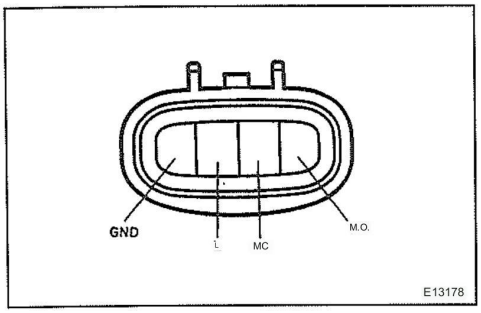
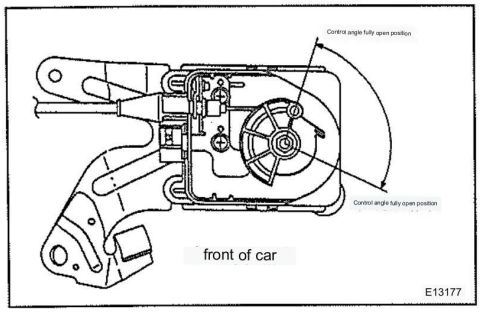


cruise control actuator

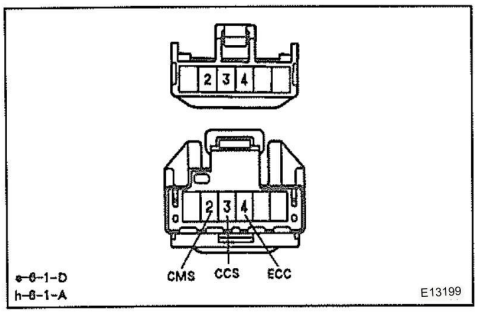
1 Work inspection

(1) Check that the output pulley locks when connecting the battery's ④ GND terminal to the L terminal of the connector and the battery's ④ GND terminal. Connecting the battery in reverse will damage the actuator. And definitely not. (2) Connect the + of the battery to the MO terminal of the connector, and the battery to the MC terminal of the connector. Verify that the motor rotates when the battery is connected. (3) In the state of (2), when you connect the battery to the L terminal and the battery to the GND terminal, check that the output pulley rotates to the open side, the motor stops at the MAX position, and the pulley also stops. Ru.

(4) (3) When the battery is connected to the MC terminal of the connector and the battery is connected to the MO terminal of the connector while battery voltage is applied between the L terminal and GND terminal, the output pulley rotates to the closed side. and check that the motor stops at MAX and the pulley also stops.



spiral cable



1 Continuity check

(1) Check that there is a conductor between each terminal of the spiral cable. Standard CMS CMS There is conduction between terminals CCS CCS There is continuity between terminals ECC There is conduction between ECC terminals

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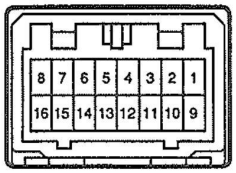
cruise control computer

(1) Vehicle Measure the voltage with the wire harness connected.



E13305

No.	Terminal name	input/output	connection	Measuring conditions	Reference voltage Battery voltage: 10~16V
1	BATT	input	BATT ↔ GND	at that time	10~16V
2	STP—	input	STP— ↔ GND	press the brake pedal	10~16V
				don't press the brake pedal	1V or less
3	D	input	D ↔ GND	Shift to other than D range	1V or less
				D range	10~16V
4	Pi	output	Pi ↔ GND	IGON main switch ON	1.2V or less
				IGON main switch OFF	10~16V
5	To	input	Tc ↔ GND	IG ON TDCL or diagnostic check connector Tc terminal open	10~16V
				IG ON TDCL or diagnostic check connector Tc terminal E1 terminal short circuit	1V or less
6	ECT	input	ECT ↔ GND	O/D running	1V or less
				O/D cut running	10~16V
7	MC	output	MC ↔ GND	CRUISE While running COAST switch ON	Wave height 9~15V Waveform 1 Reference
				CRUISE While driving and ACC switch ON	1V or less
8	L	output	L ↔ GND	CRUISE Running	9 ～ 15V
				CRUISE When not running	1V or less
9	B	input	B ↔ GND	IG ON	10 16V
10	CCS	input	CCS ↔ GND	IG ON	10~16V
				IG ON CANCEL switch ON	4.3 8.7V
				IG ON SET/COAST スイッチ ON 中	2.6 6.2V
				IG ON RES/ACC スイッチ ON 中	0.9 3.6V

16

times box times times
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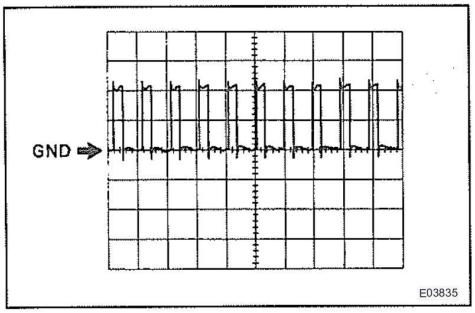
No.	Terminal name	input/output	connection	Measurement condition	Reference voltage signal [Small voltage: 10~16V る
11	CMS	input	CMS ↔ GND	IG ON メ乀ON	0.5V or less
				IGON メ厂メ乀 OFF	10~16V
12	SPD	input	SPD ↔ GND	IG ON Car stopped	1.5V or less is 4.7 ~ 5.2V
				Running	3~7V waveform 2 reference
13	IDL	input	IDL ↔ GND	IG ON メmouth fully closed	1.5V or less
				IG ON Hy	10~16V
14	O/D	output	O/D↔GND	O/DIET CRUISE Running	10~16V
				O/Dメ乀♡Chi operation廿:0/DEL CRUISE While driving (example: driving on a steep slope, etc.)	1V or less
15	M.O.	output	MO ↔ GND	CRUISE While driving ACCヌ亻 ON	Wave height: 9~15V See waveform 3
				CRUISE While driving COASTメ乀ON 中	1V or less
16	GND	input	GND ↔ ボア Kazuhisa Nyoichi	at that time	1V or less

JE2985



<Reference> oscilloscope waveform

waveform 1

measurement terminal MC-GND

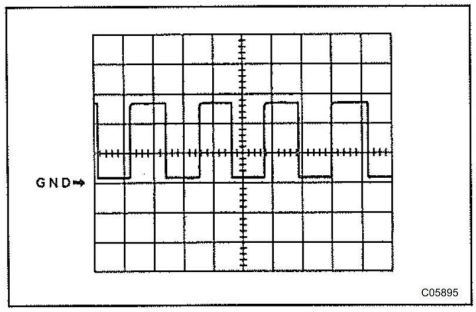
instrument set 5V/DIV,50ms/DIV

Measurement condition Evening儿ー乂˝ール儿ー乂口丫

Decelerate with the roll switch (must be done on a flat road)

注意 The duty ratio of the pulse waveform depends on the road surface condition and vehicle load condition.

It changes depending on etc.



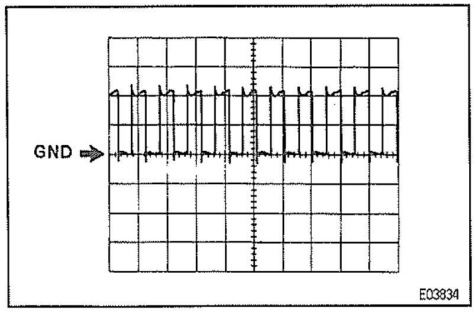
waveform 2

Measurement terminal SPD GND

Instrument set 5V/DIV,10ms/DIV

Measurement conditions: When running at approximately

注意 60km/h ·Vehicle speed is high (°C), waveform period is short (°C).



waveform 3

measurement terminal MO GND

Instrument set 5V/DIV,50ms/DIV

Measuring conditions: ku儿ー乂口小口ー儿飞While driving ku儿ー乂˝丁

Accelerate with the roll switch (must be done on a flat road)

注意 .The Gakuichi ratio of the Inumata waveform changes depending on road surface conditions, vehicle load conditions,

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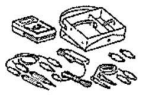
T0048379

auto clock

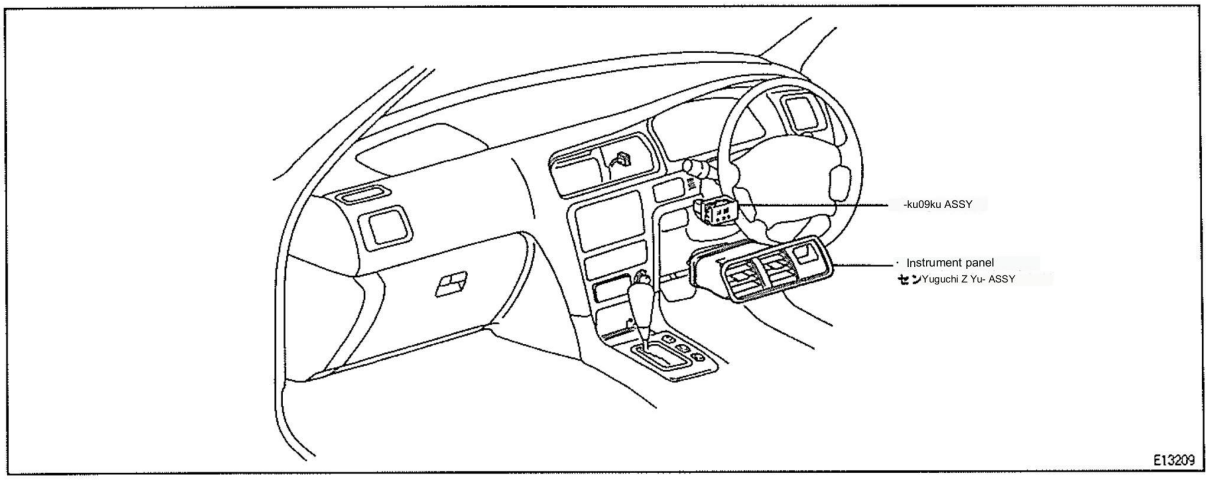
Preparation items

soup bowl

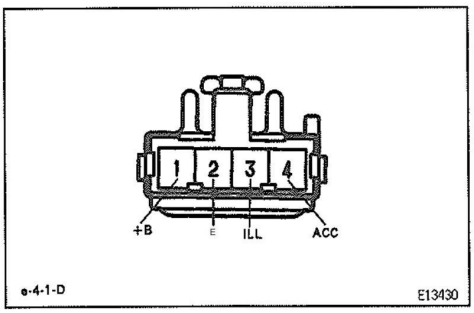
	09082-00012	toyota electrical tester	For each part point school

auto clock

Delivery configuration diagram



T0048380



Individual inspection

ㄣKU ASSY inspection

circuit point tower

(1) Mouth and evening - connection and separation, 181 side mouth and evening, each

Check the height of the terminal.

standard

terminal number	Terminal name Item		Inspection conditions	standard
2	E		Groove normal time	Continuity
1	+B	電圧	Always	10~14V
3	ILL	Densho	light control 21 OFF →	0V→10~14V
4	ACC	電圧	ON ignition switch OFF→ACC	0V→10~14V

JE0937

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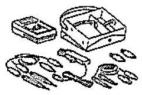
T0040051

audio

Preparation items

soup bowl

	09082-00012	Toyota Electrical Tester	For window antenna inspection

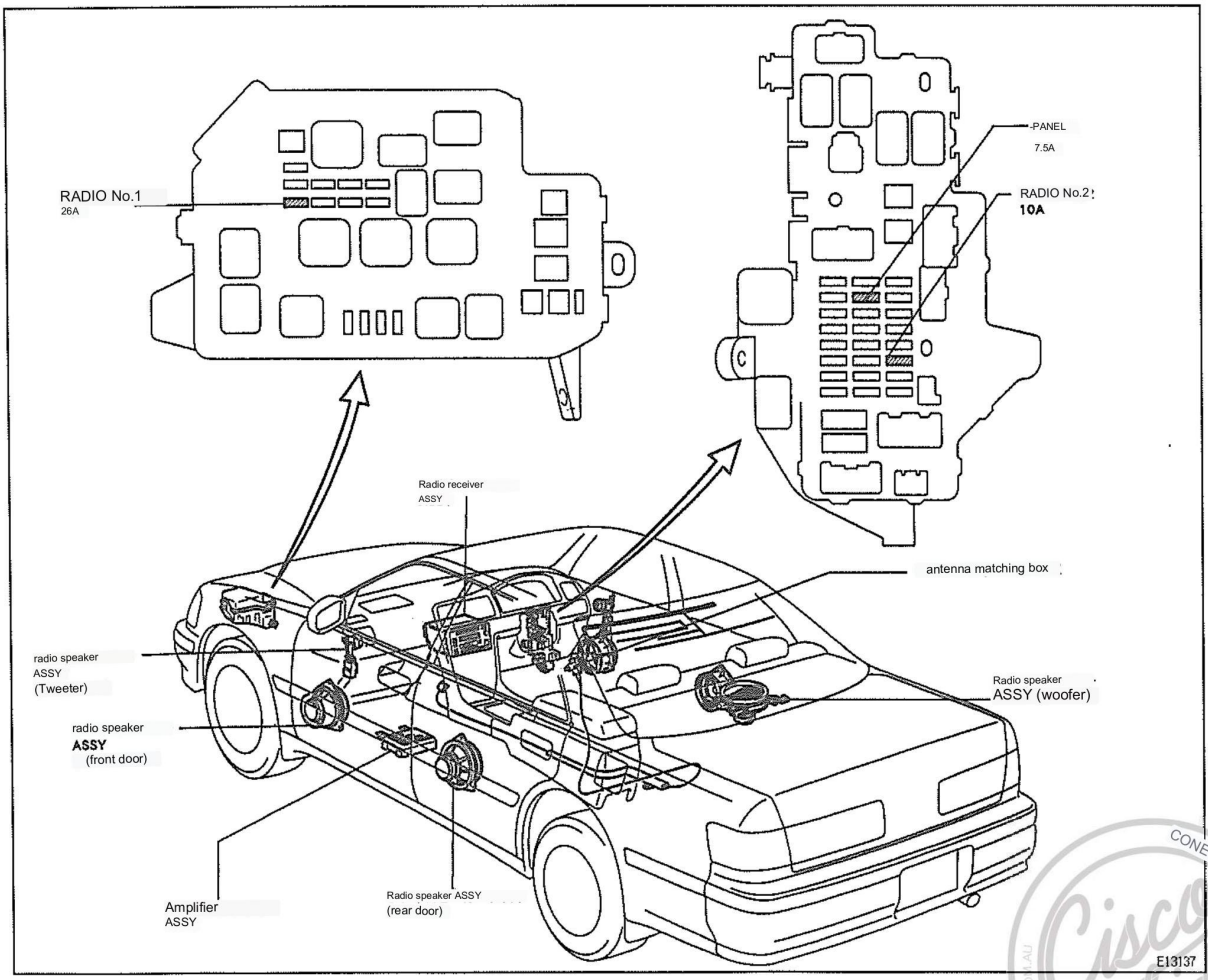
Oils and fats Others

aluminum foil	50501	For window antenna inspection
Fine brush, white gasoline, masking tape	52901	For window antenna repair
*Repair paste (Fujikura Kasei Paste D-500)	50101	

*Tsuchiya Co., Ltd. TEL 052-331-5451 2-9-29 Kamimaezu, Naka-ku, Nagoya 460 Parts

T0048652

layout diagram



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T0048950

troubleshooting

Noise questionnaire

(1) When troubleshooting noise, it is important to first fully understand the content of the customer's complaint, so use the following questionnaire to accurately determine the failure situation.

Noise questionnaire

Broadcaster	Questions and answers	Estimation original Cause
A.M.	Noise occurs in a certain place.	There is a strong possibility that it is external noise.
	Noise occurs when listening to weak broadcasts. Ru.	The same program may be sent from broadcast stations in different locations, and there are cases where you may be listening to a different station even though the broadcast content is the same. Especially in the case of NHK, such mistakes happens often.
	Noise occurs only at night.	There is a strong possibility that the beat was broadcast from the continent.
FM	Noise occurs while driving or in a certain location. Ru.	There is a strong possibility that it is multipath noise or fading noise caused by fluctuations in FM radio waves. stomach.

If the situation in which the noise occurs does not correspond to any of the interview questions, an inspection is performed based on the "problem phenomenon."

JA0612

〈参考〉 - Multipath noise and fading noise Since FM radio waves have a very high frequency, the influence of the ground and buildings can disrupt the radio waves, causing various types of reception interference.

- multipath noise

``Jaja" and ``juru" occur when radio waves are reflected by large obstacles and enter the receiver with a time lag from the radio waves traveling straight.

"Gel" sound.・

Fading noise

This refers to the noise that occurs when radio waves are disrupted by obstacles and the strength of the radio waves fluctuates in a complicated manner within a narrow range, resulting in ``sound", ``shasha", and ``buzzing" sounds.

Precautions during inspection

(1) The noise that enters the radio is usually suppressed to the extent that it does not cause any practical problems, and it is unlikely that extremely loud noise will enter the radio. If there is a large amount of noise, first check to see if the grounding at the antenna installation part is normal.

(2) Check that all official noise prevention parts are installed correctly, and that no third-party products are installed or non-standard wiring is used.

(3) If the radio is left out of tune (not tuned to the broadcast), noise will be noticeable and it will be easier to determine the phenomenon.

16

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Inspection using audio diagnosis (receiver with CD changer control function)

1 Start diagnosis mode

(1) With the audio OFF and the ignition switch set to ACC, press the CD button three times while pressing preset buttons "1" and "6" at the same time. ("1-190" will be displayed and the mode will move to LAN check mode.)

<Reference> In LAN check mode, devices connected to the system are displayed in descending order of device code. (Use the tuning button to advance or reverse the display.)

If you want to check the current system status

2 System check mode

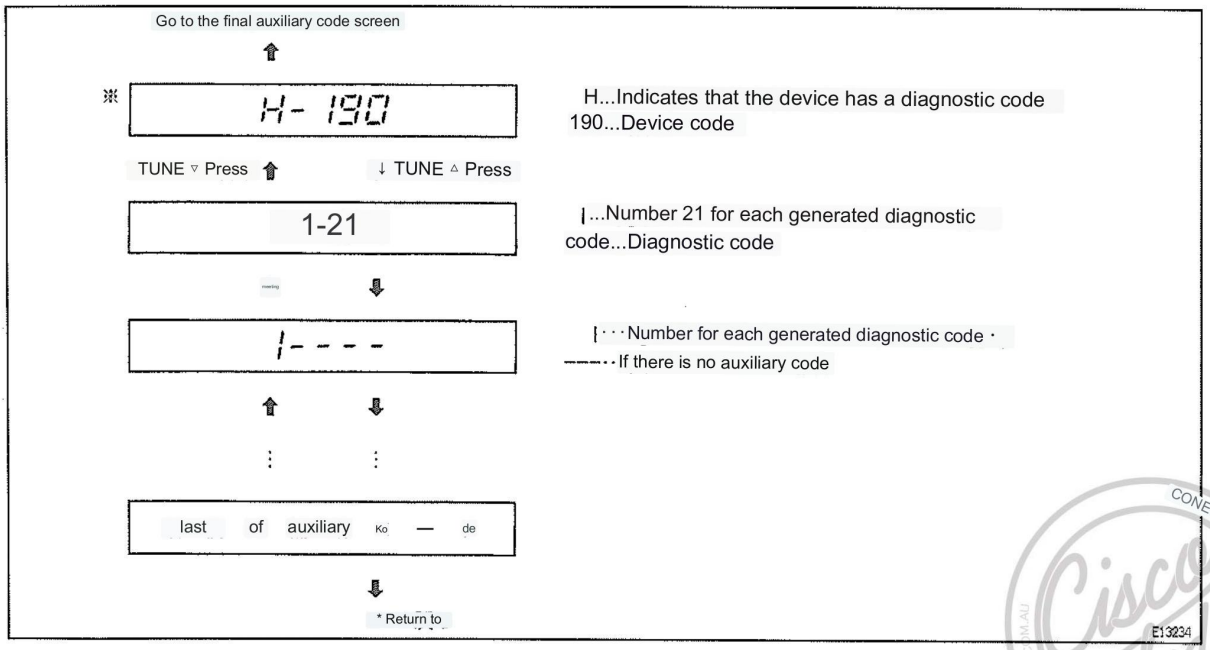
(1) Press the preset button "1" in LAN check mode to move to system check mode. ("SYS" will flash to indicate that the system is being checked)

<Reference> It may take approximately 40 seconds for the system check to complete. (2) Perform the operations shown in the diagram and read the test results.

<Reference> - Test results are displayed in the order of the smallest device code, then the diagnostic code, and then the auxiliary code for the diagnostic code. - If there is no diagnostic code, 00 (normal code) is displayed.

- To return to LAN check mode, press preset button "6".

· The figure is a table for when diagnosis code "21" occurs in the device with device code (190) (ROM error occurs in the radio receiver).



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(3) Check the abnormality from the diagnosis code list.

(4) When finishing the inspection, turn off the ignition switch. If

you want to display past diagnostic codes

3 Diagnosis memory mode

(1) Press preset button "2" in LAN check mode to move to diagnosis memory mode. ("COdE" will be displayed blinking)

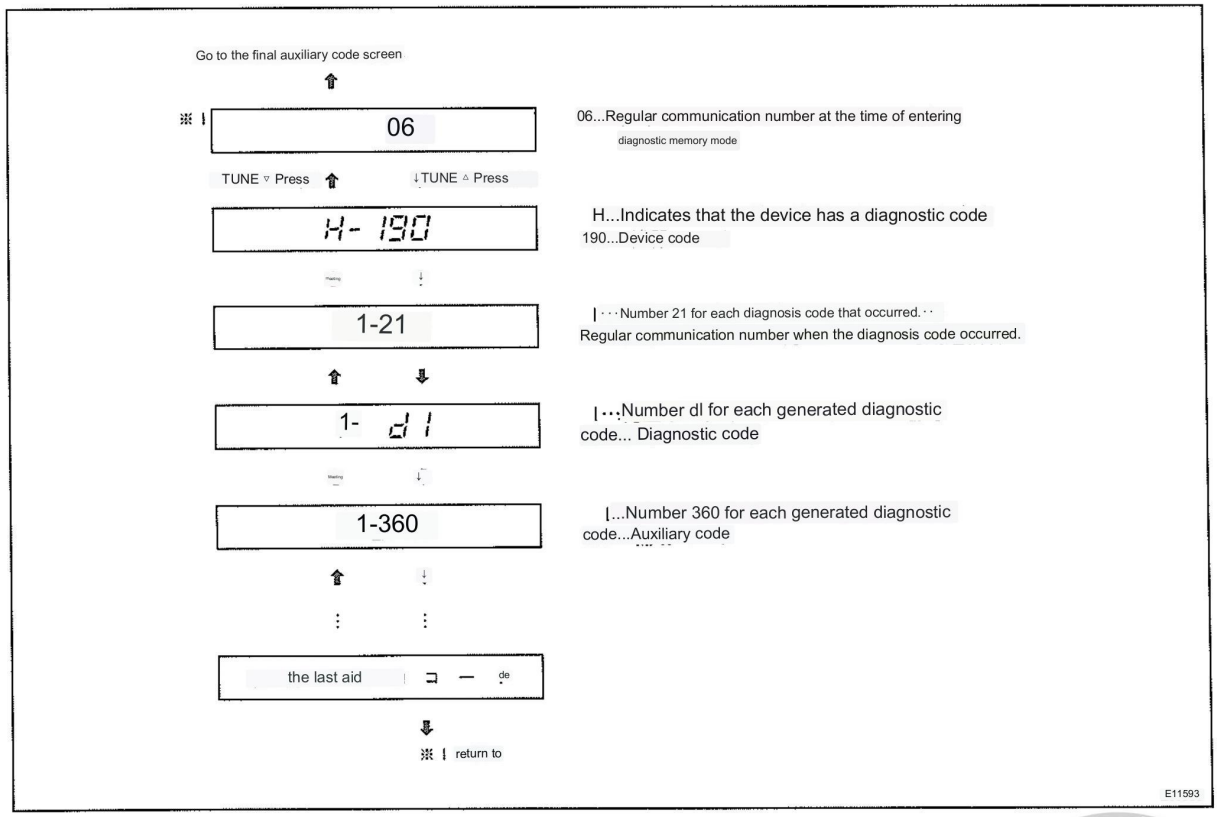
(2) Perform the operations shown in the diagram and read the diagnostic code.

<Reference> Diagnosis memory mode displays the regular communication number at the time of entering 期diagnosis mode, and then displays the device code regular communication number (when a diagnosis code occurs), diagnostic code, and correction code in descending order of device code. 助Displayed in code order.· If there is no diagnostic code, 00 (normal code) will be displayed. Ru.

· To return to LAN check mode, press "6" on the preset button.

Press.· The diagram shows that the diagnostic code "d1" has occurred in the device with device code (190) and auxiliary code (360) (radio receiver and CD chain).

An example of the display when a transmission error has occurred between the jar and the jar.



16

(3) Check the abnormality from the diagnosis code list.

(4) When finishing the inspection, turn off the ignition switch.

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4 Diagnosis code memory deletion

(1) After repairing the abnormality, start the diagnosis mode and move to the LAN check mode.

(2) Press and hold the preset button "5" for 2 seconds. (The display is CLr) (3) Press the preset button "2" to move to the diagnostic memory mode, and confirm that the normal code (00) is output.

Equipment code, diagnosis code list

equipment code	Equipment name	equipment code	Equipment name
150	1DIN size	240	CD changer with video output *
190	TV* Audio tuner	360	CD changer*
178	navigation	360	CD deck *

*:Connection equipment by supplies

code	Diagnosis code	Diagnostic items	Examination contents	Diag code compatible models	treatment
190 (radio receiver)	D1	*Transmission error	Communication failed consecutively with the device indicated by the auxiliary code.	All models	• Inspect the wire harness of the equipment indicated by the auxiliary code • Replace the equipment indicated by the auxiliary code
	D2	Regular communication no response	Connection confirmation with the device indicated by the auxiliary code failed consecutively.		
	D4	Regular connection confirmation abnormality	There is no confirmation of connection from the device indicated by the auxiliary code.		
	FF	Diac no response	There is no response regarding diagnosis from the device indicated by the auxiliary code.		
	20	Microcomputer error	Communication error with sub microcomputer	Made by Matsushita only	radio receiver replacement
	21	ROM error	ROM error inside microcontroller		
	22	ROM error	ROM error inside microcontroller		
	41	AM tuner error	AM tuning operation is not completed.		
	42	FM tuner error	FM tuning operation Not completed.		
	50	Cassette error	Cassette error (other code errors)	Only made by Pioneer	· Cassette tape inspection · Radio receiver replacement
	51	Cassette EJECT defective	Cassette loading or EJECT operation does not complete. CD	Made by Matsushita only	
	60	CD abnormality	abnormality (Abnormalities other than other codes)	All models	radio receiver replacement
	61	CD EJECT defective	CD loading, EJECT operation does not complete.	Matsushita CD included system only	· Disk inspection · Radio receiver replacement
	62	DISC scratches	The disc is upside down or scratched.		

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Inspection using chart by defect phenomenon

Malfunction phenomenon \ Inspection item or cause	radio receiver	table player	CD PLAYER	stereo amplifier	antenna antenna code	speaker	cassette tape	CD	wire harness	Radio wave condition Others
ラ Ji	No sound (no noise)	○			○		○			○	
	Either speaker does not sound (no noise is produced)	○			○		○			○	
	There is noise, but neither AM nor FM	○			○	○					
	sounds. Either AM or FM. does not sound	○				○					Outside service area
	感 Poor quality (low volume)	○			○	○				○	Fade out outside service area
	o AM or, AM· FM distort together	○			○	○	○			○	Antenna input excessive speed Foreign objects in the car, interference with other parts of the speaker,
	Only FM is distorted	○			○						weak electric field broadcasting station, multipath noise
	The number of automatic channel selections is small.					○				○	Service area 外
Te l	Cassette tape does not fit		○							○	Foreign object inside tape player
	No sound		○		○			○		○	
	One of the speaker cars does not sound		○		○			○		○	
プレ l	poor sound quality sound is small		○		○			○		○	tape player head dirty
	Tape player won't eject		○					○			Inside the tape player 異 adulteration
	Uneven rotation/tape winding; Yarn/auto reverse failure Trouble finding		○					○			[Tape player header] decapstan axis Which dirt is mixed with foreign matter?
	the beginning of a song I can't hear it		○					○			
CD player Ya l	CD doesn't fit			○					○	○	Foreign object inside CD player "Contamination"
	D Don't play			○					○	○	CD face down · High temperature inside the car · Condensation due to temperature changes
	the sound of the disc jump			○					○		CD player removal Poor attachment and temperature changes Condensation and running vibration caused by
	poor sound quality CD with low			○					○	○	
	sound is ejected do not			○					○	○	CD player contaminated with foreign matter
	One of the speakers does not sound. The			○	○		○			○	
Haze	broadcast can be heard. is both AM and FM a lot of noise	○			○	○				○	Occurs only in a specific range External noise if
	There is a lot of noise in either AM or FM.	○			○	○				○	Outside service area
	Noise when starting the engine Noise due	○			○					○	high tension cord mating
	to vibrations and shocks while driving occurs.	○	○		○	○				○	static noise
	Sometimes noise occurs on FM while driving.	○			○						Fade out multipath Noise/fading noise
	Hinone in general	○	○		○	○	○			○	Outside the service area/No signal 良 · External noise, static electricity fibers · Defective noise filter
	Di ヘッ後する灯 ジ Input ープ混 Jan is 音	○	○		○					○	headlight control roll computer
	Turn on the ignition switch noise gets mixed in	○	○		○					○	Optitronme — Tar

16

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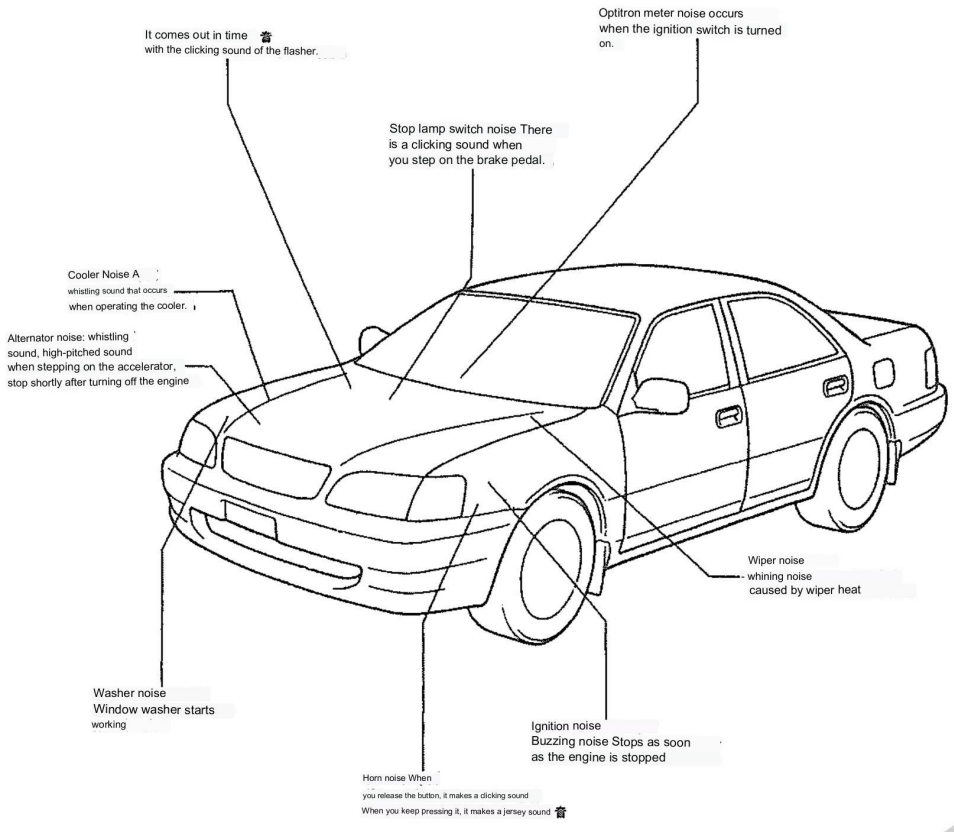
Hinone	noise gets mixed in

• Confirm that there is no external noise. If this step is neglected, the source of the noise may become unknown and misidentification may occur, so be sure to perform this step. · When implementing noise prevention, first prevent the items with the strongest noise.

	ignition system	Charging system	Other electrical equipment
power system noise generation	(1) Spark plug (2) High tension cord (3) Distributor (4) Engine control computer	[1] Alternator commutator and carburetor Ripple in the contact area with the brush	(1) Motor commutator for wipers, blowers, etc. (2) Starter and switch when starting (3) Fuel pump contacts (4) Changeover switch spark (5) Horn (6) Flasher contacts (7) Loose contact of wire harness (8) Static electricity generated on tires or alternator V-belts (9) Stop lamp switch contact (10) Discharge headlamp (after light turns on) (11) Optitron meter (when ignition switch is ON)



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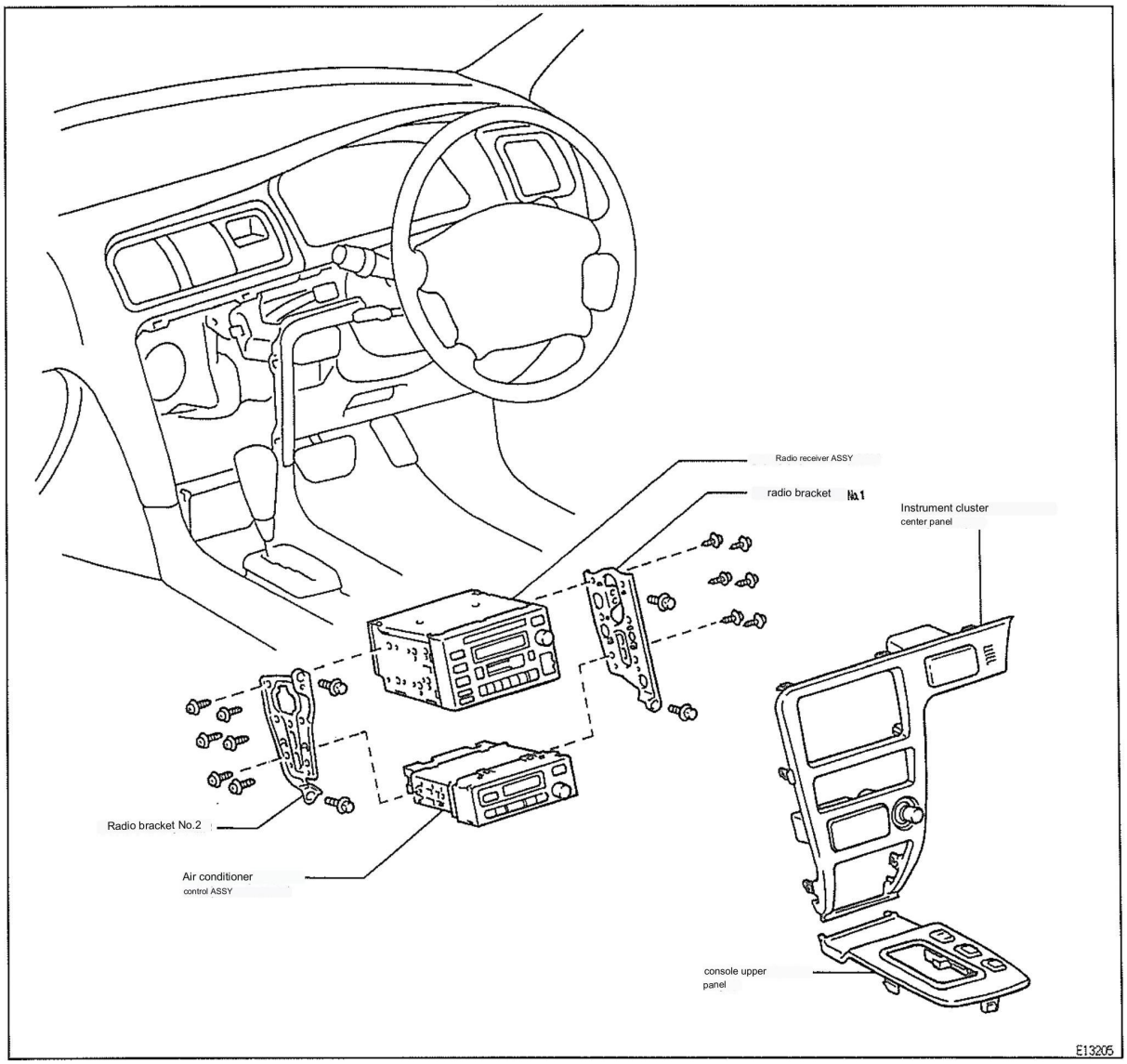
T0048655

Radio receiver ASSY

<reference> Radio receiver ASSY removal (see “Body” and “Instrument panel”)

Detachment configuration diagram



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T0045822

Amplifier antenna ASSY

<Reference> To remove the amplifier antenna ASSY, remove the roof headlining. (See “Body” and “Roof Headlining”)

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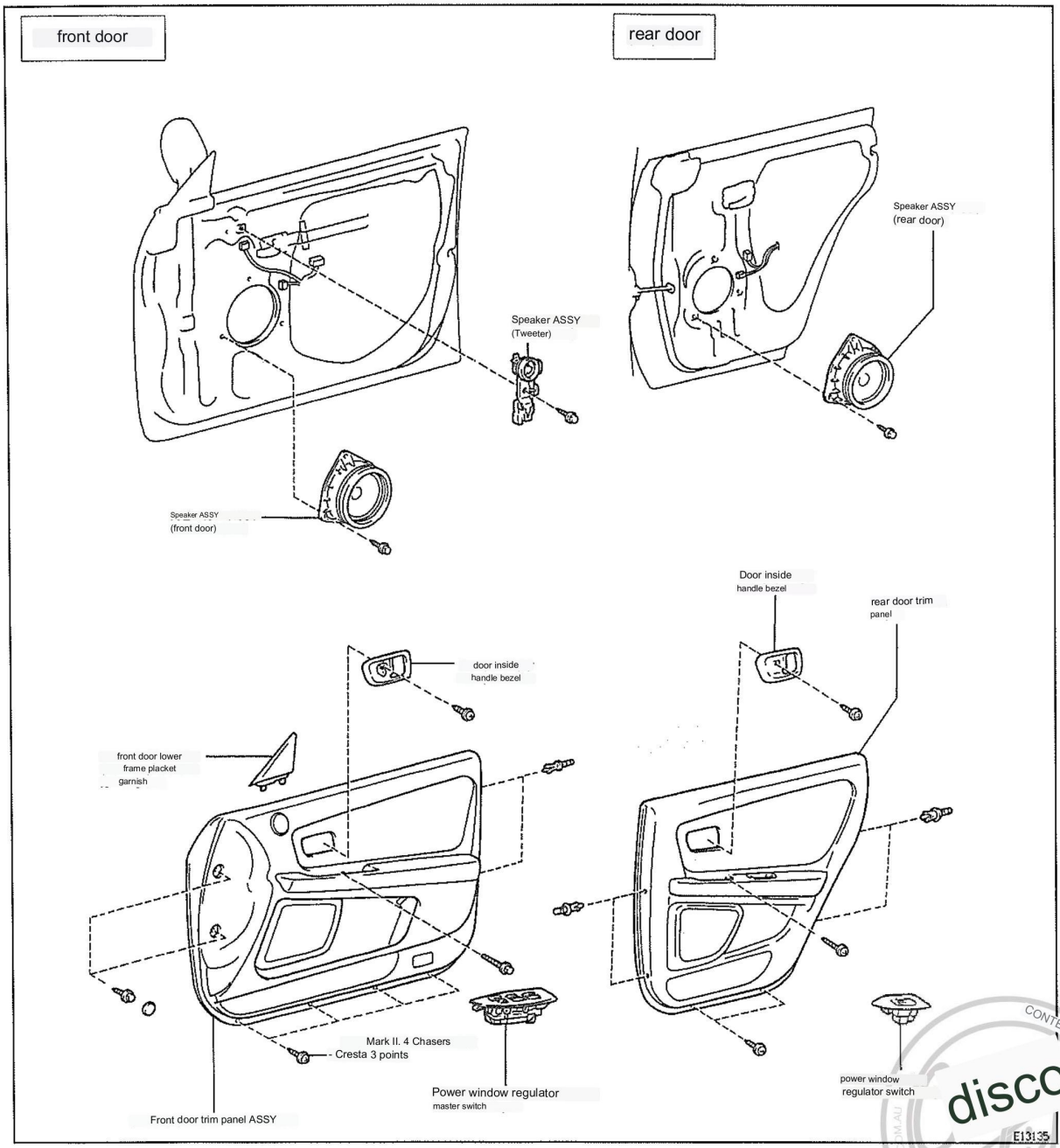
T0048858

radio speaker ASSY

〈参考〉 Radio speaker ASSY (front, tweeter, rear) removal
Removal (“Body” - “Front & Rear Door”),
(See “Roof Headlining”)

Detachment configuration diagram



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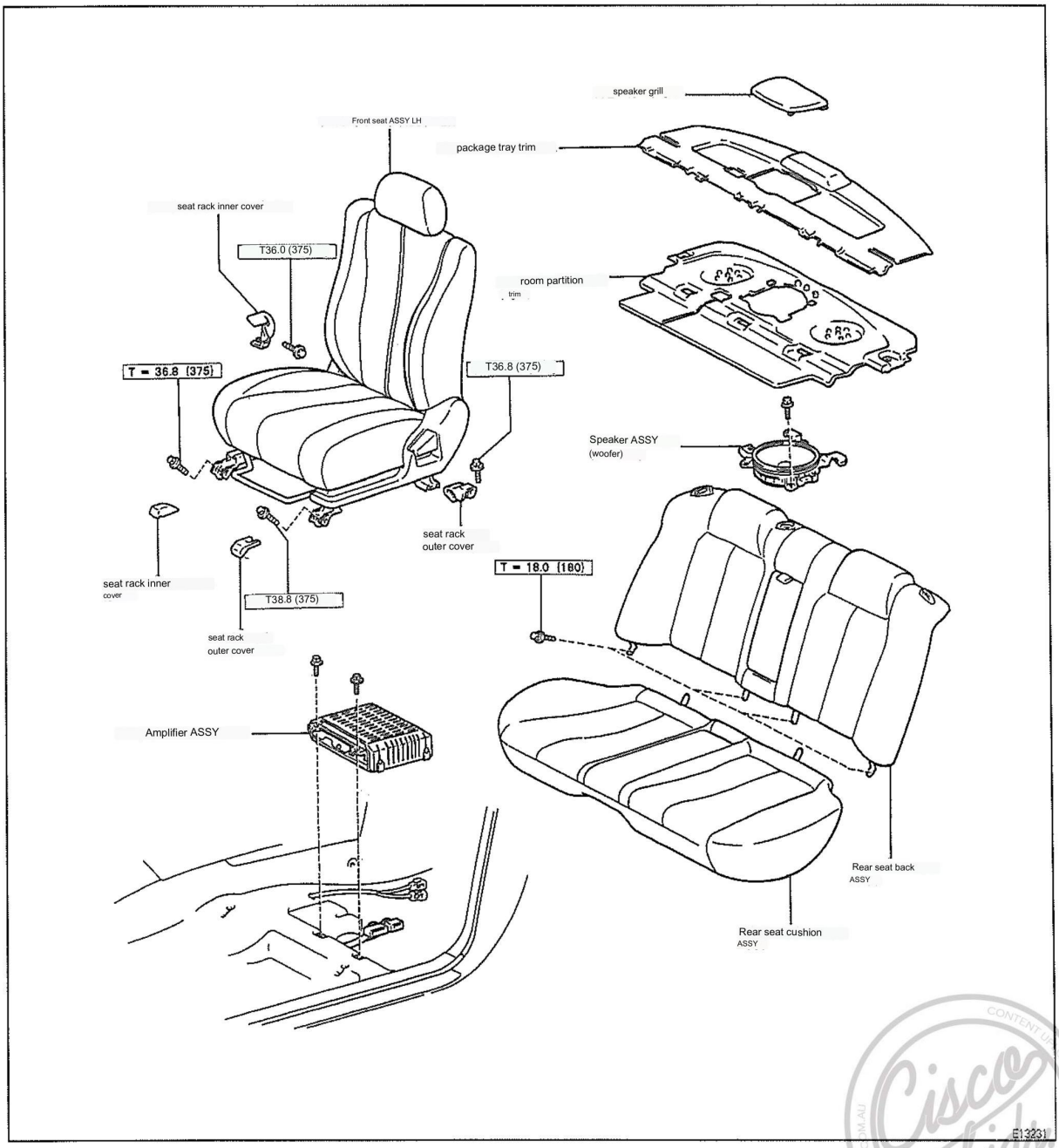
Stereo component amplifier ASSY & Speaker ASSY (woofer)

《参考》 · Stereo component amplifier ASSY removal (See ``Body'' - ``Instrument Panel'')

· Speaker ASSY (woofer) removal ("body" - (See “Back Window Glass”)

Detachment configuration diagram



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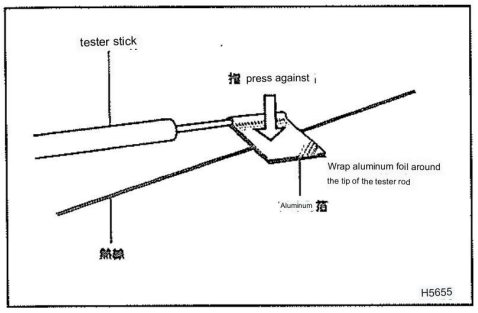

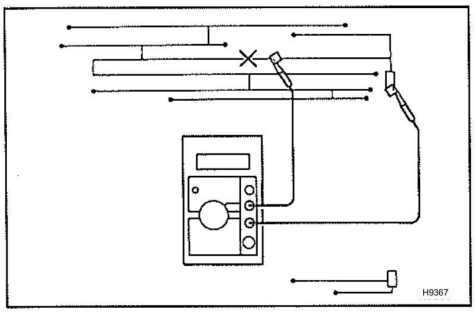

Rear window print type

antenna inspection, correction

Chuchin - When cleaning dirt on the glass with a cloth, use a dry soft cloth and wipe in the direction of the antenna to avoid damaging the antenna.

· Do not use general detergents or glass cleaners.

Rear window printed antenna inspection

1 Wire inspection

Be careful not to damage the printed antenna by using the tip of the tester stick.

Wrap aluminum foil as shown in the picture, and while pressing the aluminum foil with your fingers, Perform inspection.

(1) Place a tester rod on the printed antenna and move it around to check for any areas where continuity is lost.

Rear window printed antenna modification

("Window defogger" - "Print type hot wire inspection and correction" - "Print type heat wire correction" reference)

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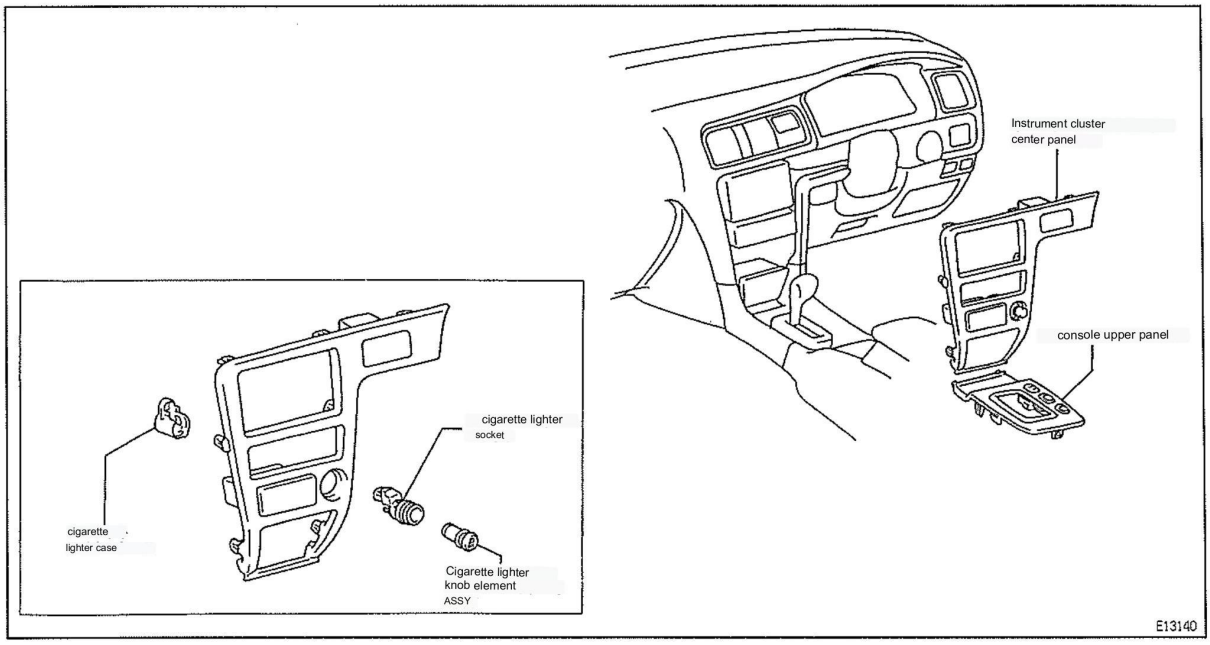
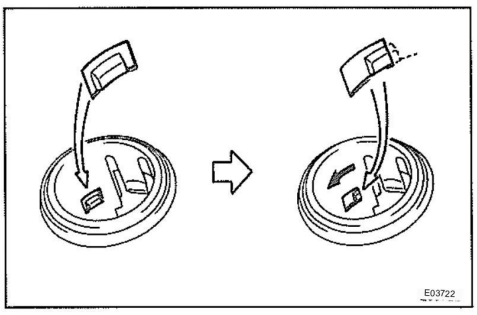
cigarette lighter

Nutrient decomposition diagram





16

Points to note during removal work

1 Cigarette lighter socket removal (1) Rotate the cigarette lighter socket in the circumferential direction.

(2) Unengage the tabs on the cigarette lighter socket and cigarette lighter bezel, and push the cigarette lighter socket about halfway towards the indoor side.

(3) Align the tab on the cigarette lighter socket with the notch in the cigarette lighter bezel and remove the cigarette lighter socket towards the indoor side.

Points to note during installation work

1 Installing the cigarette lighter socket

(1) Align the tabs on the cigarette lighter socket with the notches on the cigarette lighter bezel and assemble.

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17 Heater & Air Conditioner

heater&

Air conditioner 17 - 2

Preparation items 17- 2
Parts layout diagram 17--3
Precautions when installing and removing the cooler ..... 17 — 5
Notes on new refrigerant HFC-134a (R134a) ..... 17 — 5
Precautions when installing and removing the cooler ..... 17 — 6
New refrigerant HFC-134a (R134a) replacement instructions/ ..... 17 — 7
Functional inspection (vehicles equipped with JZ engine) 178
Functional 17-8
inspection Cooler piping tightening torque 17-9
troubleshooting 17-10
How to proceed with troubleshooting 17-10
Diagnosis check 17-10
Diagnosis code memory deletion circuit 17-10
diagram 17-15
Diagnosis code list (sensor check) ..... 17 — 16
Inspection using chart for each trouble ..... 17 — 18
phenomenon Air conditioner control ASSY 17-29
Decomposition ..... diagram 17-29
Air conditioner control ASSY
Points to note during disassembly work... 17-29
Heater Blower Motor W/Fan 17-30
Deconfiguration diagram 17-30
Evaporator ASSY Futang 17-31
configuration diagram 17-31
Evaporator ASSY installation notes 17-32
Air conditioner unit ASSY 17 ..... - 33
Decomposition diagram 17-33
Exploded configuration diagram ..... 17 - 34
Air conditioner unit ASSY
Points to note when assembling... 17-35
cooler compressor
W/magnetic clutch... 17 - 36
Fuyin configuration diagram 17-36
Exploded configuration diagram ..... 17 — 37
cooler compressor
W/Points to note when removing magnetic clutch... 17-37
cooler compressor
W/magnetic clutch disassembly... 17-38
cooler compressor
W/Magnetic clutch assembly... 17-38
cooler compressor
W/Points to note when installing magnetic clutch... 17-39
Individual inspection... ..... 17 41
Heater main relay 17-41
magnet clutch relay 17-41
Blower motor 17 ..... - 41
blower motor control 1742
Inside air sensor, outside air sensor 17-42
Evapo sensor 17-42
Solar radiation sensor... 17-43
Internal/external air switching damper servo ..... 17 — 43
Air mix damper servo 17-43
mode damper servo 17-43
swing servo 17-44
pressure switch 1744
magnetic clutch 17-45
Compressor lock sensor 17-45
air conditioner amplifier 17-46

17

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times steamed noodles

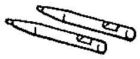
Y0049240

heater &

air conditioner

Preparation items

S S T

	09904-00010	expander set	Magnetic clutch removal/detachment
	(09904-00050)	Crow No.4	Magnetic clutch removal/detachment

tool

Vice pliers (09130-00140)	11301	Magnetic clutch hub removal and removal
Socket hexagon wrench 5 09043-20050	23903	Expansion valve removal and removal

instrument

Toyota Electrical Tester 09082-00012	70029	各部点検用
temperature meter	21701	For setting temperature conditions during each inspection
Air conditioner tool set HFC-134a (R134a)	53803	For refrigerant gas removal and filling

Oils and fats Others

Vacuum pump	53101	Refrigerant gas filling 用
Vacuum pump adapter	53102	For refrigerant gas filling
Refrigerant HFC-134a (R134a)	32802	For refrigerant gas filling
halogen leak detector	53804	For refrigerant gas leak inspection
Compressor oil (ND-OIL8)	32302	For application when connecting cooler piping For replenishing compressor
Hairdryer	51501	For thermistor inspection
Toyota genuine long life coolant	32001	For cooling water replenishment
Vinyl tape	53702	Cooler tube preservative

17

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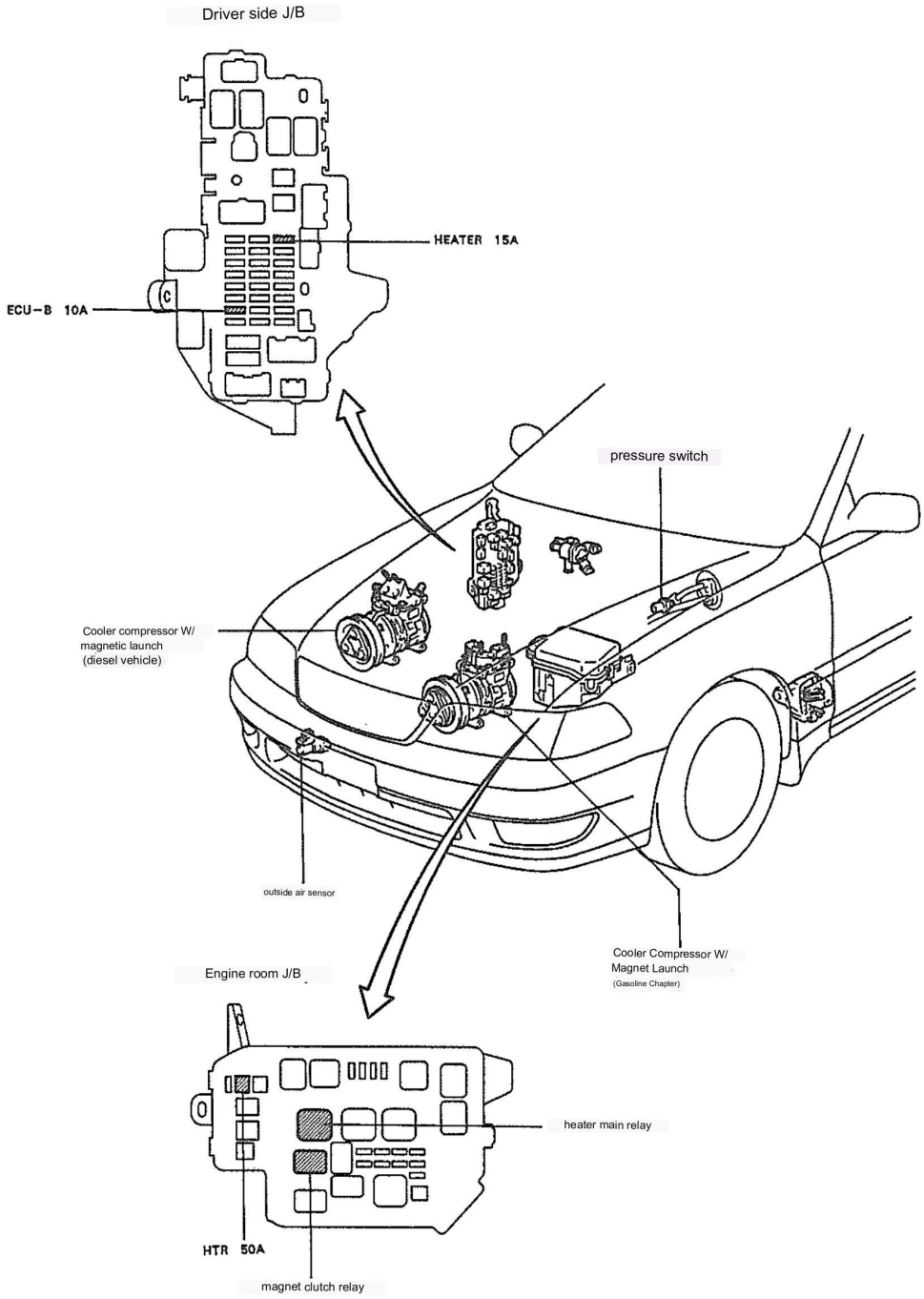
Y0048241

Parts layout diagram



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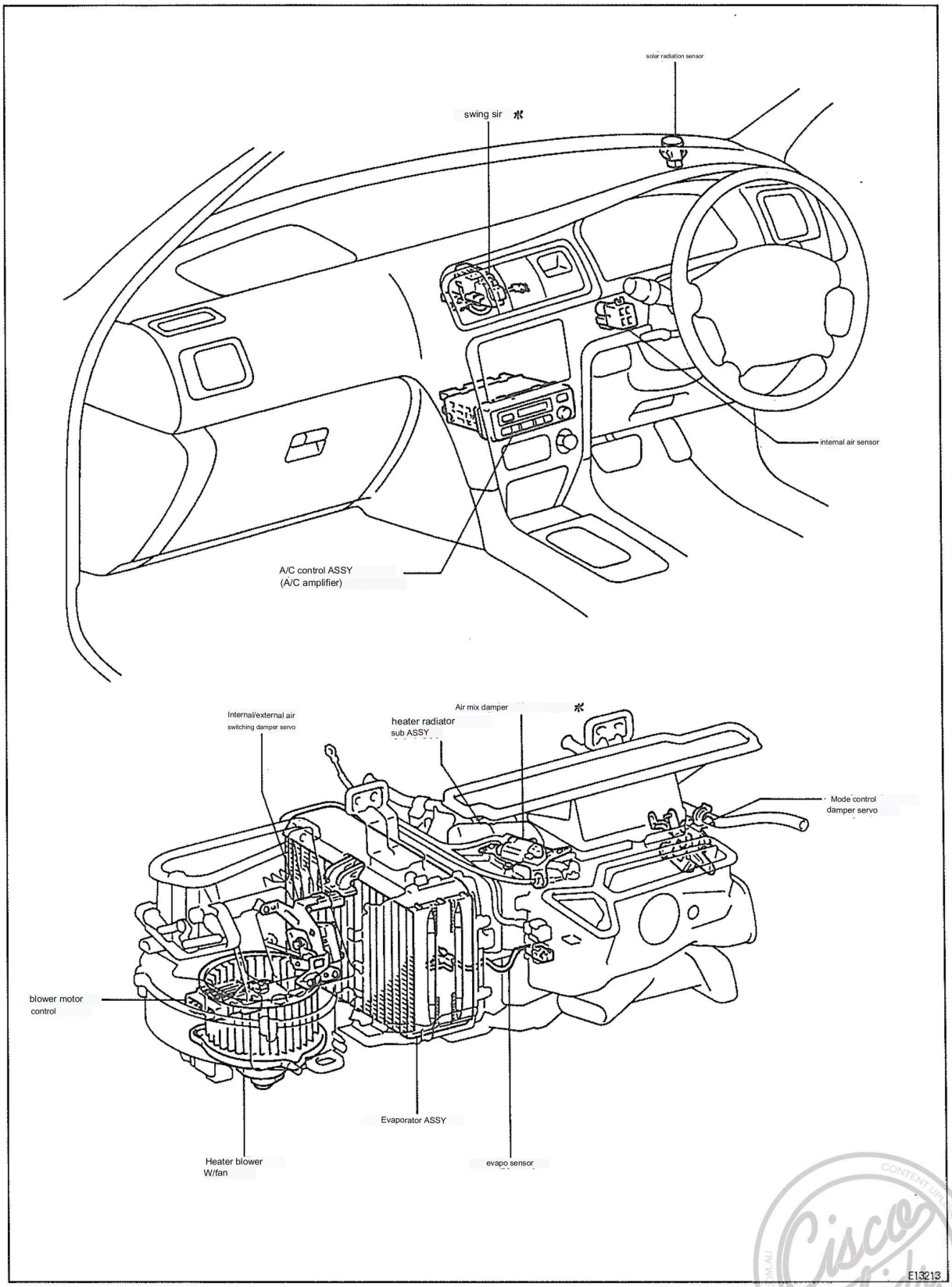

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TC042E5

Precautions when installing and removing the

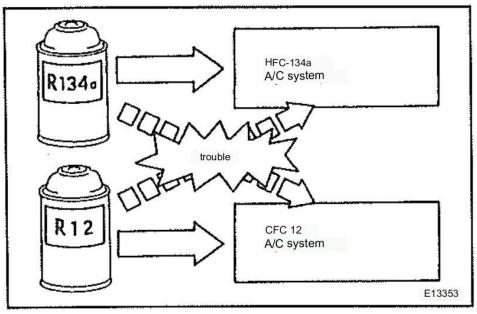
cooler Precautions regarding the new refrigerant HFC-134a (R134a)

1 About compatibility

(1) The parts that make up the refrigerant cycle, compressor oil, etc.

Compatibility between HFC-134a (R134a) and traditional R12 systems

There is no interchangeability.



2 About the new refrigerant HFC-134a (R134a)

(1) Always use HFC-R134a (R134a) as the refrigerant.

Note · Normally harmless when handled normally, but exposed to open flame or high temperature conditions

It may turn into toxic gas under

Ru.

- Pay close attention to ventilation and do not work in closed areas.

〈参考〉 Use a manifold gauge exclusively for HFC-134a (R134a) to prevent incorrect charging.

We are trying to prevent rain.

3 About compressor oil (1)

Be sure to use ND-OIL 8 as compressor oil.

<Reference> If R12 compressor oil is used in an HFC-134a

(R134a) system, there is a risk of compressor locking due to poor

lubrication or refrigerant leakage due to swelling of rubber parts.

Conversely, using HFC-134a (R134a) compressor oil in

an R12 system will reduce the durability of the A/C system.

do.

(2) Compressor oil for HFC-134a (R134a) is highly hygroscopic, so

if you remove A/C parts, immediately isolate them from the

atmosphere with a plug, vinyl tape, etc.

(3) Compressor oil for HFC-134a (R134a) is acrylic

Do not splash the oil as it will have a negative effect on the

resin. About 40 rings

(1) Be sure to use an O-ring for HFC-134a (R134a).

Ru.

<Reference> O-rings for HFC-134a (R134a) and O-rings for R12 are different

in material, wire diameter, etc., so incorrect use may cause gas leakage.

There is a risk.

5 Precautions when vacuuming work

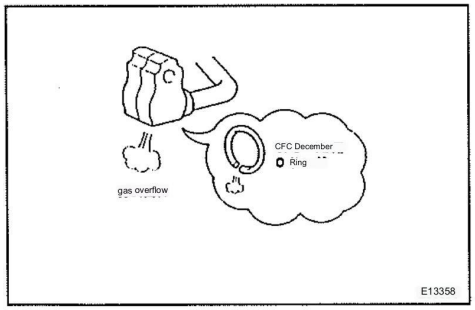
(1) When performing vacuuming, attach a solenoid valve adapter

to the vacuum pump for R12.

〈参考〉 If the solenoid valve adapter is not used and the vacuum is left as

is, the oil (for R12) in the vacuum pump may flow backwards

flow into the HFC-134a (R 17 134a) system.



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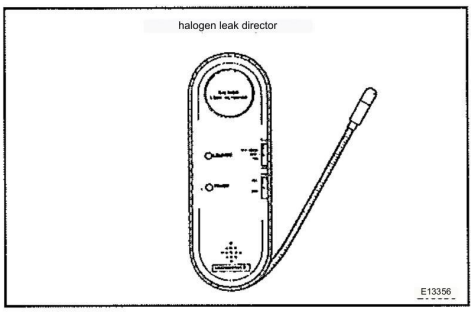


6 About refrigerant gas leak inspection

(1) Use a halogen leak detector (ND part number 9514600060) to check for refrigerant gas leaks.

<Reference> The conventional halide torch type leak tester is HFC-134a(R 134a) cannot be used because it does not contain chlorine.· Conventional electric gas leak testers may not be able to detect HFC-134a (R134a) because the molecules are smaller than those of R12 due to low sensitivity.

(2) Check for refrigerant gas leaks with the ignition switch OFF.

<Reference> If you do this while the engine is running, the leaked gas will be diluted by the wind from the fan or blower, making it difficult to detect.· Refrigerant pressure inside the cooler unit decreases, making it difficult for gas to leak.

· The electric gas leak tester reacts to sudden changes in humidity due to moist air coming from the drain hose (especially the highly sensitive HFC-134a (R134a) compatible type is likely to react) and misdiagnoses.

Precautions when installing and removing the cooler

1 What to do if refrigerant gas gets into your eyes

(1) Do not rub your eyes with your hands or handkerchief.

(2) Receive treatment from a professional ophthalmologist.

2Refrigerant gas (service can) Handling precautions

(1) Do not heat the service can. If a service can is directly heated or placed in boiling water, the pressure inside the can will become abnormally high and there is a risk of the can bursting. If it is unavoidable to heat the service can, use hot water below 40°C.

(2) Do not drop or knock the service can.

(3) Do not open the high pressure valve of the manifold gauge while the engine is running. If the high pressure valve is opened while the engine is running, there is a risk that high pressure gas will flow back into the service can and cause the can to explode. (4) Do not handle service cans near your face. Also, be sure to wear safety glasses. To wear.

3 Installing piping

(1) Always use a new O-ring.

<Reference> Be sure to use an O-ring for HFC-134a (R134a). When

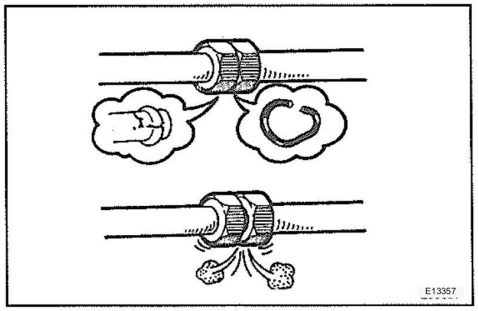
• removing the O-ring, be careful not to damage the piping. Use soft materials. (2)

Apply enough compressor oil (ND-OIL 8) to the O-ring.

After tightening, tighten to the specified torque. Insufficient torque will cause poor adhesion, and excessive torque will damage the O-ring and cause refrigerant gas leakage.

(3) Bend the hose piping naturally and do not twist or bend it forcibly.

stomach.



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T0049097

New refrigerant HFC-134a (R134a) replacement instructions

1 New refrigerant HFC-134a (R134a) removed

(1) Turn on the A/C switch.

(2) Operate the compressor for 5 to 6 minutes at an engine speed of approximately 1000 r/min, circulate the refrigerant together with the refrigeration cycle, and collect as much compressor oil remaining in each functional part as possible into the compressor.

(3) Stop the engine.

(4) Connect a manifold gauge to the service pulp of the cooler piping, and slightly open the low pressure side valve (suction valve) and high pressure side valve (discharge valve) to gradually release the gas.

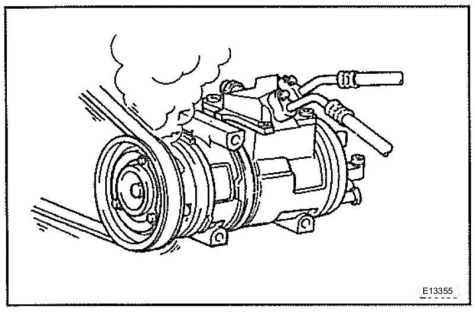
注意 If the valve is opened too far, oil will spray out along with the refrigerant. (5) When the gas has finished releasing, close the valves on the low pressure side and high pressure side of the manifold gauge.

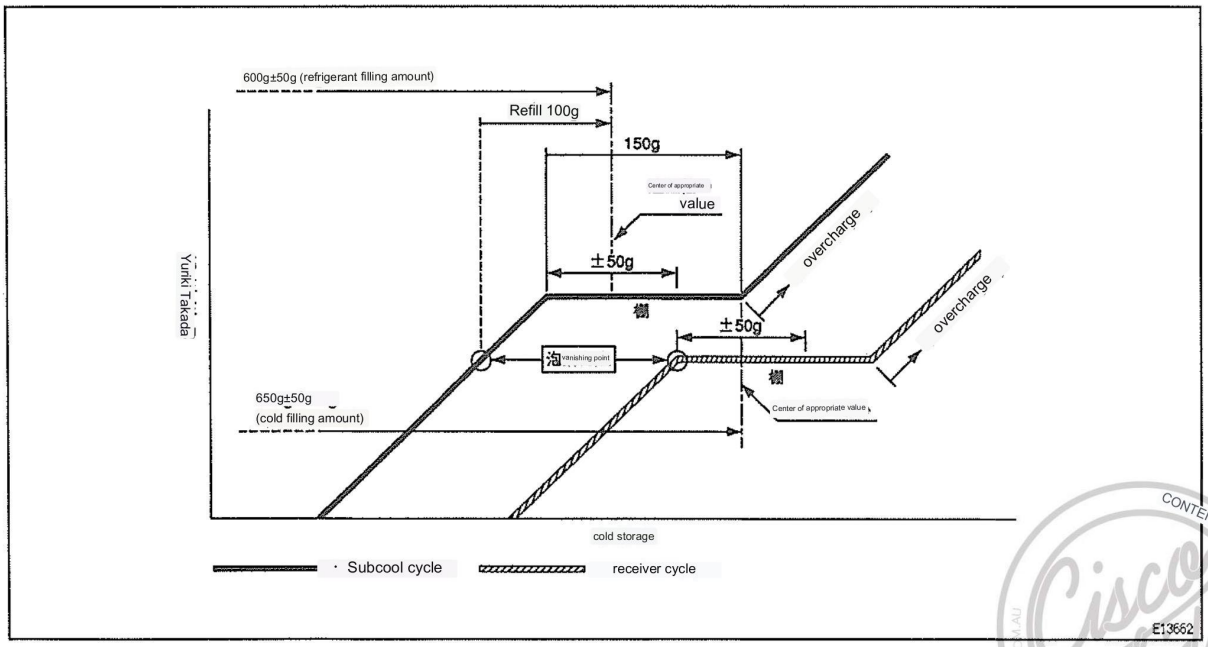
2 Refrigerant HFC-134a (R134a) filling

(1) New refrigerant HFC-134a (R134a) filling amount

Standard New refrigerant gas filling amount Subcool cycle (2JZ-GE, 1JZ-GTE) 600±50g receiver cycle (1JZ-GE, 1G-FE, 2L-TE) ••••650±50g · If the

注意 cooler compressor is operated without refrigerant, it may seize due to poor lubrication, so never operate it before filling it with refrigerant. · Also, after charging the refrigerant, perform a break-in operation at 2000 r/min or less for at least 1 minute (1G-FE, 2LTE) for at least 2 minutes (JZ series engines).





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T0048688

Functional inspection (vehicles equipped with JZ engine)

Functional check

1 Refrigerant power check

(1) Install the manifold gauge.

(2) Set the vehicle to the following conditions.

item	conditions
door	Fully open
Setting temperature display	18.0 (MAX COLD)
Switching between inside and outside air	FRESH
engine rotation	idling
Outside temperature	10℃ or more
Front A/C	ON

(3) In the state of (2), switch to blower speed HI and after the refrigerant pressure stabilizes, measure the high and low pressures and check the blower HI region point from the graph.

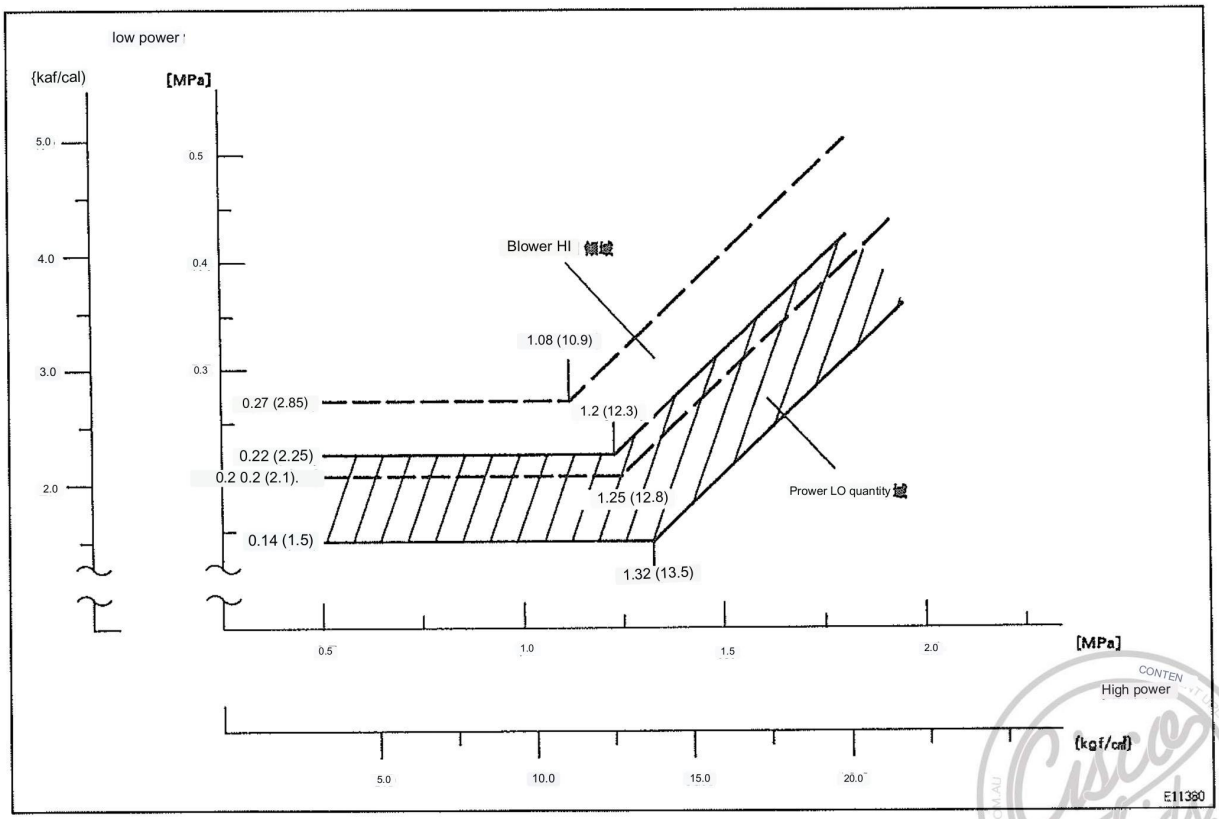
seek.

Standard blower within HI area

(4) In the state of (3), switch to the blower speed LO and after the refrigerant pressure has stabilized, measure the high pressure and low pressure and check the blower LO speed based on the graph.

Find castle points.

standard Blower inside LO area



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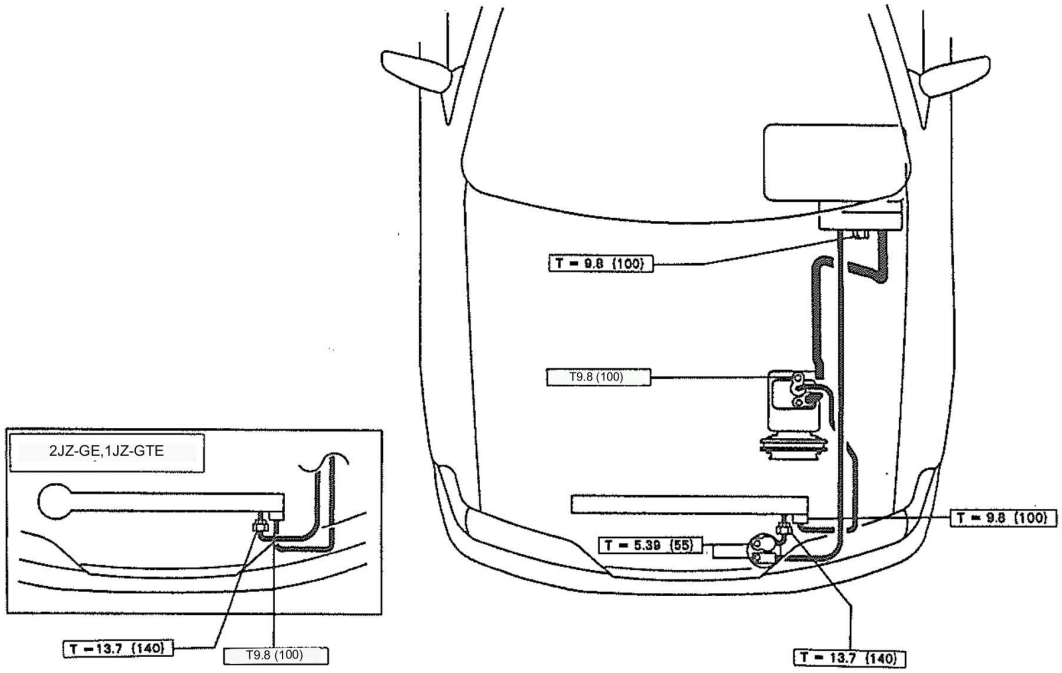
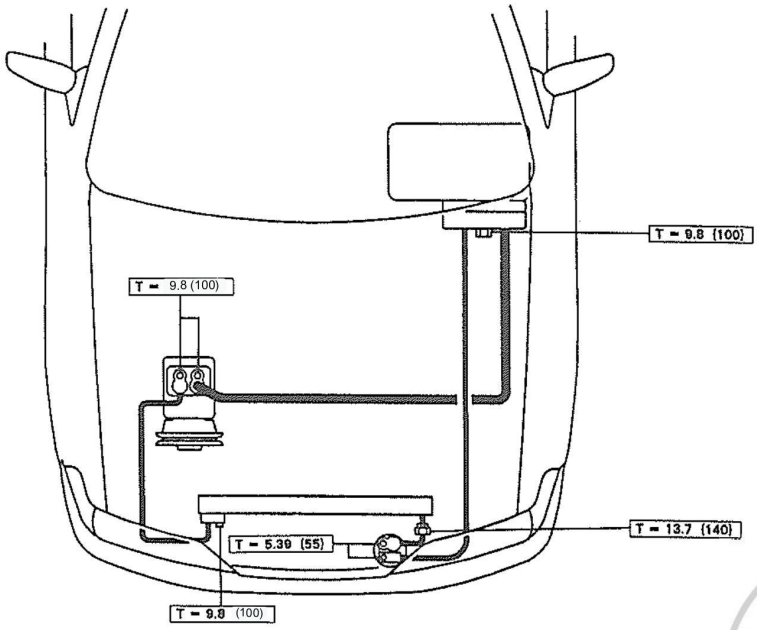
Cooler piping tightening torque

1JZ-GE,IG-FE



2JZ-GE,1JZ-GTE

2L-TE



]...Scary soup book [N·m {kgf-cm)]

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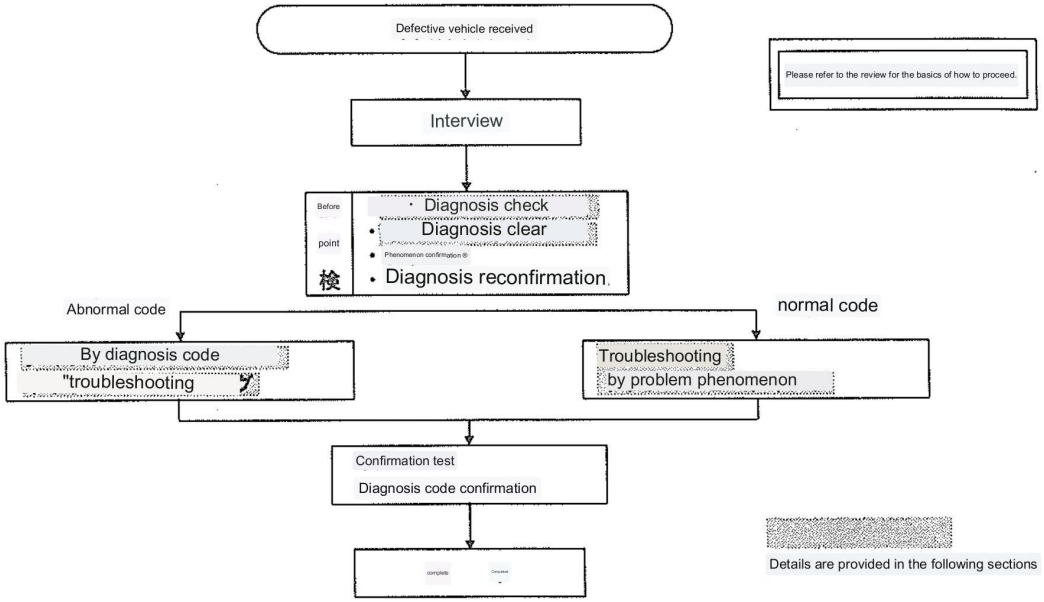
Troubleshooting How

to proceed with troubleshooting



Diagnosis check

machine		Noh
How to read	Check contents	内 capacity
panel diagnosis	indicator check	Blinking indicators of each mode switch and temperature setting display
	sensor check	・ Display of sensor failure status (past, current) ・ Clear past failure data
	actuator check	Actuator check pattern output

JB3629

Diagnosis code memory erase

(1) Inspect and repair defective parts.

(2) Perform the following ① or ② to erase the memory of the code.

① While checking the sensor, hold down the “DEF” switch and press “CONTENT UPLOAD” Press the “RrDEF” switch.

②Remove the fuse (ECU-B 10A) for at least 30 seconds.

(3) After connecting the fuse, perform a sensor check and a normal code will be output. Make sure that the

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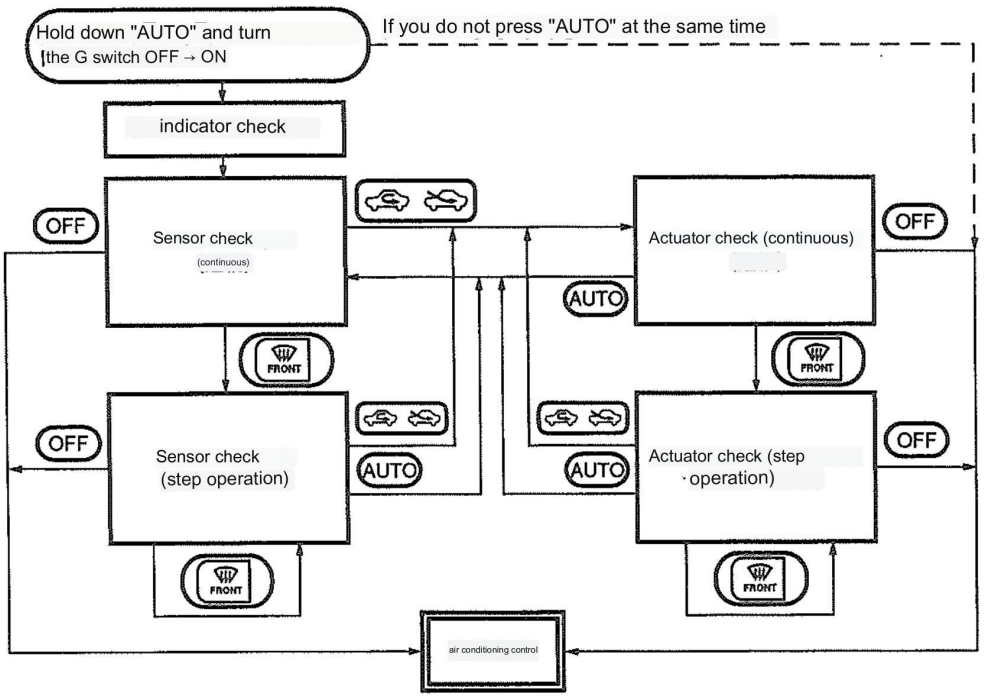
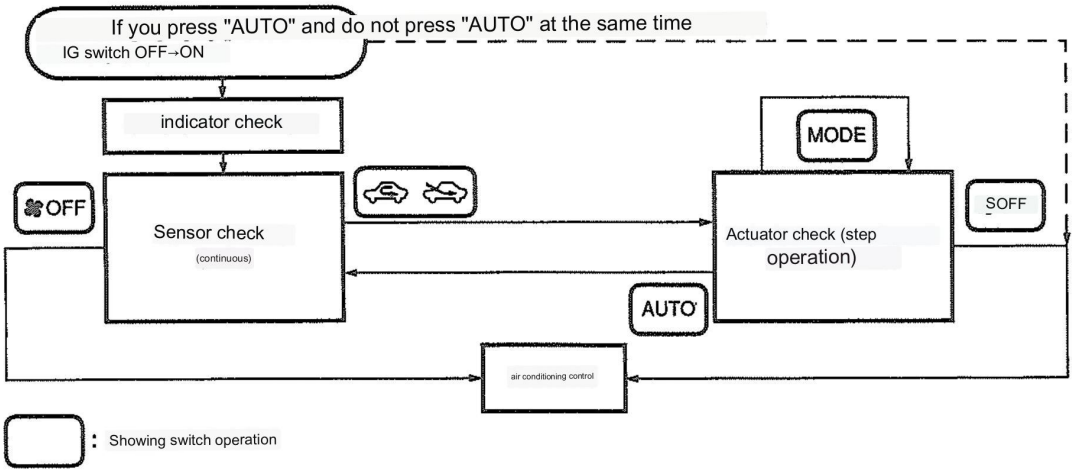
With LCD display



No LCD display



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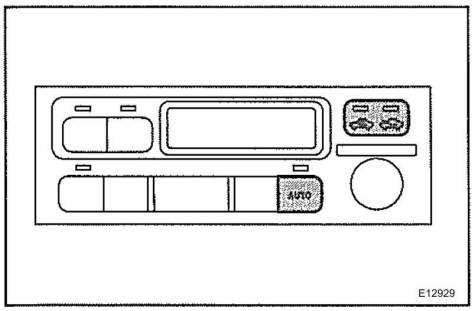
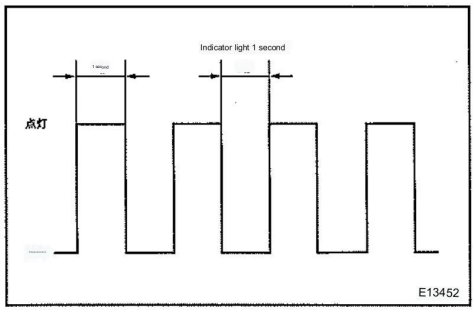


1 panel diagnosis

indicator check

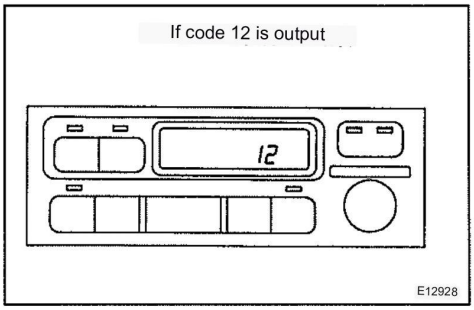
(1) Turn the ignition switch OFF ON or start the engine while pressing the ``AUTO'' switch and the ``Inside/Outside Air Switch'' switch on the air conditioner control panel at the same time.



(2) Check that all indicators turn on and off four times at 1-second intervals.

〈参考〉 • After the indicator check is completed, the sensor check will automatically start. •If you want to cancel check mode, press the OFF switch.

If code 12 is output



sensor check

With LCD display

(1) Perform an indicator check.

(2) After the indicator check is completed, the sensor check will automatically start.

クヰmode (continuous operation).・ The figure

〈参考〉 shows the case when code "12" is output, which is displayed on the set temperature display section.

do.

- If there are two or more abnormal items, display them in descending order of code number.

・ Past failure means that an abnormality was detected in the past and is displayed by blinking the set temperature display.

(3) If there are two or more error codes and they are difficult to read, press the “FRONT DEF” switch to fix the code (step operation) and read it. Each time you press the "FRONT DEF" switch, the items step up. Display hierarchically.

(4) From the diagnosis code list (sensor check code) Read the code (past failure, current failure).

•Caution Pressing the "OFF switch" will end panel diagnosis, so if you wish to continue checking the actuator, press the "inside/outside switching" switch.

Conveyance box
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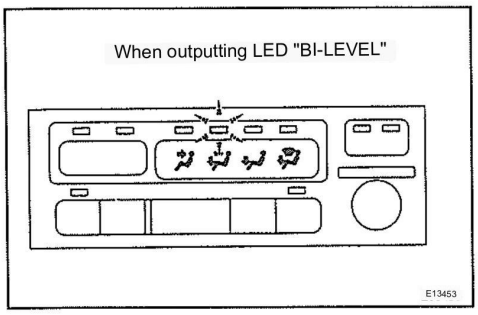


No LCD display

(1) Perform an indicator check.

(2) After the indicator check is completed, the sensor check will automatically start.

mode (continuous operation).

(3) Display the error code by blinking the indicator.

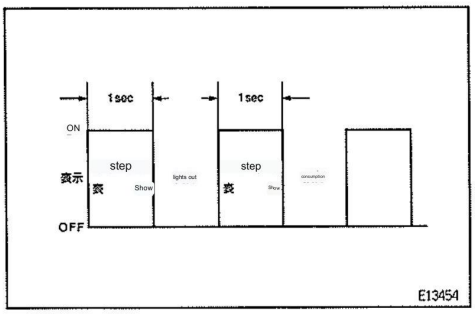
(4) From the diagnosis code list (sensor check code)

Read the code (past failure, current

注意 failure). Pressing the "OFF switch" will end panel diagnosis,

so if you want to continue checking the actuator,

Press the “inside/outside switching” switch.



Actuator check

(1) Start the engine and warm it up sufficiently.

(2) Perform indicator checks.

(3) After transitioning from indicator check to sensor check,

Press the “Outdoor Air Switch” switch to activate the actuator check mode.

Set to C.

(4) Repeat steps 1 to 7 (with LCD display) and 1 to 5 (without LCD display)

at 1-second intervals to check the actuator (continuously), so check the

temperature and airflow visually and

manually. (5) If it is difficult to inspect because the steps shift, select “FRONT DEF”

(With LCD display) “Mode” (No LCD display) Press the switch ス

to change the step to fixed display (step operation) and inspect.

“FRONT DEF” (with LCD display) “MODE” (without LCD display)

Each time you press the switch, the steps change step by step.

〈参考〉 · The display blinks at 1 second intervals even during step

• operation. Press the "AUTO" switch to enter sensor check mode.

Ru.

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Car with LCD display

standard

Step Na	Driver side temperature setting display	707- Level	Air outlet	Suction mouth	A/C compressor	Air mix damper opening
1	0	0	(FACE)	(FRESH)	OFF	- 149%
2	1	1	(FACE)	(RECIRC)	OFF	-14%
3	2	10	(FACE)	(RECIRC)	ON	-1496
4	3	17	(BI-LEVEL)	(FRESH)	ON	509%
5	4	17	(FOOT)	(FRESH)	ON	50%
6	5	23	(FOOT)	(FRESH)	ON	113.59%
7	6	23	(FOOT−DEF)	(FRESH)	ON	113.5%
8	7	31	(DEF)	(FRESH)	ON	113.59%

Car without LCD display

Step No.	blower level	Air outlet	entry point	A/C compressor	air mix damper 開度
1	1	(FACE)	(RECIRC)	OFF	-14%
2	10	(BI-LEVEL)	(RECIRC)	ON	50%
3	17	(FOOT)	(FRESH)	ON	113.5%
4	23	(FOOT−DEF)	(FRESH)	ON	113.5%
5	31	(DEF)	(FRESH)	ON	113.59%

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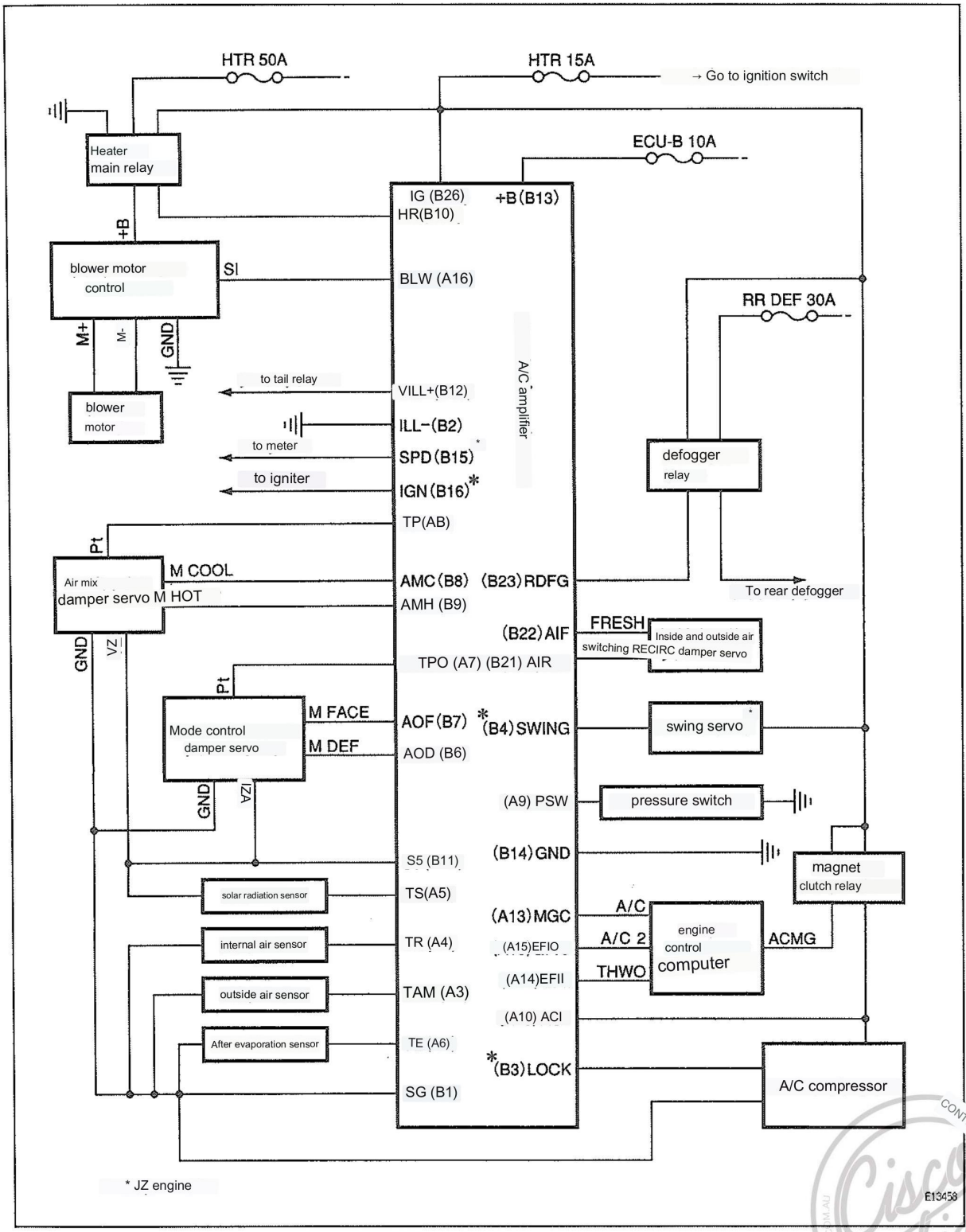
circuit diagram



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Diagnosis code list (sensor check)

code number		Diagnostic items	Inspection area		
With LCD display (temperature display)	No LCD display (LED flashing)	Diagnosis contents ① Diagnosis conditions ② Abnormal condition abnormal period	output	wire harness	単 体
00	AUTO	normal	——	——	——
11	FACE	Internal air sensor system 1 ② Disconnection or short circuit in the internal air sensor system ③ Continuously running for more than 8.5 minutes	A/C amplifier refiner	A4 internal air sensor B1	
12	BI-LEVEL	Outside air sensor system ① ② Open air sensor system or short circuit ③ Continuously for 8.5 minutes or more	A/C amplifier refiner	A3 outside air sensor B1	
13	FOOT	Post-epapo sensor system ① ② Disconnection or short circuit in the sensor system after Epapotherapy ③ Continuously running for more than 8.5 minutes	A/C amplifier refiner	A6 Evapo rear sensor B1	
14	FOOT/DEF	Water temperature sensor system ① ② Disconnection or short circuit in the water temperature sensor system ③ Currently only a failure	A/C amplifier refiner	A14 To engine control computer	
21	DEF	solar radiation sensor system ① ② Short circuit in solar radiation sensor system ③ Continuously for 8.5 minutes or more ① ② Disconnection in solar radiation sensor system ③ Currently only faulty	A/C amplifier refiner	B11 solar radiation sensor an A5	
22	A/C	Compressor lock (JZ series) ① A/C switch ON (2 Compressor rotation speed/pulley ratio (1.1) If the difference と between the engine rotation speed and the engine rotation speed deviates by 80% or more continues for 3 ± 1 seconds or more ③ Currently only broken	A/C amplifier Refire B1	B3 lock sensor B26 to igniter • Compressor lock/ belt tension	

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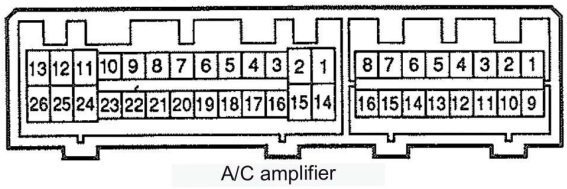
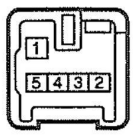
code number		Diagnostic items	Inspection area		
With LCD display (temperature display)	No LCD display (LED flashing)	Diagnosis contents ① Diagnosis conditions ② Abnormal condition abnormal period	output	wire harness	单 体
23	FRESH	Refrigerant pressure switch system ① A/C switch ON ② Refrigerant pressure signal is OFF ③ Currently only faulty	A/C Amplifier A9 Refirer	pressure switch • Refrigerant gas leak · Compressor	
31	RECIRC	Air mix damper servo potentiometer system ① ② Disconnection or short circuit in the air mix damper servo potentiometer circuit ③ Continued for more than 1 minute	A/C Amplifier A8 Refirer	[B11 4 3 air mix damper servo [B1 5	
33	Prower LOW	Mode damper servo potentiometer system ① ② Mode damper servo potentiometer circuit Disconnection or short circuit ③ Continued for more than 1 minute	A/C amplifier refiner	[B11 5 A7 3 Mode damper servo B1 4	
41	Blower M1	Air mix damper servo motor control system ① Air mix damper servo is MAX HOT →MAX COLDI ② When the actual opening degree of the air mix damper is 20% or more ③ For 15 seconds or more ① When the air mix damper servo is MAX COLD → MAX HOT ② When the actual opening degree of the air mix damper is 80% or less ③ For 15 seconds or more	A/C amplifier refiner	B9 2 B8 1 B11 4 Air mix damper servo AB 3 B1 5 • Dunbar's catch	
43	Prower HI	Mode damper servo motor control system ① When mode damper servo is DEF FACE ② When the actual opening of the mode damper is 20% or more ③ 15 seconds or more ① When the mode damper servo is FACE DEF ② When the actual opening degree of the mode damper is 80% or less ③ For 15 seconds or more	A/C amplifier refiner	B7 2 B6 1 B11 5 mode damper servo A7 3 B1 4 • Damper stuck	

Connector B Connector A



A/C amplifier



Air mix damper servo
Mode damper servo

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Inspection using charts by trouble phenomenon

1 Inspection based on failure status

(1) When checking the terminal voltage of the A/C computer during the

Select a chart and proceed with troubleshooting.

steps in the flowchart used for troubleshooting based on the failure conditions in the table below, first check the voltage of the A/C computer's power supply system.

Inspection items	Inspection terminal (terminal number)	Standards
Earth inspection	GND (B14)	1V or less
Earth inspection	SG (B1)	1V or less
+B power supply	+B (B13)	10~14V
power supply	S5 (B11)	4.5~5.5V
IG power supply	IG (B20)	10~14V

2 How to read the flowchart

- · · · · · · Items to work on
- ·····Inspection items

If no conditions are specified, turn on the ignition switch.

- · · · · ·Problem location
- · · · · · · · Items to check with the connector connected

Items to be inspected individually

Chart no.	Malfunction phenomenon
1	It doesn't work at all (it doesn't respond even when I press the switch, there's no display at all do not)
2	Blower motor does not rotate
3	The room temperature is higher or lower than the set temperature (at 25℃)
4	Room temperature does not drop (does not cool)
5	Room temperature does not rise (does not warm up)
6	Does not receive a switch (it is displayed)
7	LCD display, indicator display failure
8	LCD backlight does not light up
9	Switch knob does not illuminate at night, indicator does not dim at night
10	Blower motor won't shift speed
11	Air outlet temperature does not change
12	A/C does not work well when the sun shines (solar radiation compensation does not work)
13	Air outlet does not switch
14	Suction port does not switch
15	Compressor does not turn on
16	A/C indicator flashes (JZ series engines)

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[times]

1	Does not work at all (no response even if the switch is pressed, no display at all)

※ B Voltage check

IG switch When ON, connect A/C amplifier's B (B13) terminal to GND (B14) Is the voltage 10~14V?

NO. → *Body earth inspection

Is the voltage between the B (B13) terminal and earth of the A/C amplifier 10~14V when the IG switch is ON?

NO. → • Fuse (ECU-B 10A) blown • Wire harness defective

YES → Poor grounding

YES

※ IG voltage check

Turn on the A/C amplifier by turning on the IG switch. Is the voltage between IG (B26) terminal GND (B14) 10~14V?

NO. → • Fuse (HTR 15A) blown • Defective wire harness

YES

※ $5 voltage check

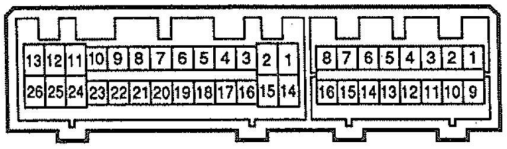
Is the voltage between S5 (B11) and SG (B1) terminals of the A/C amplifier 4.5~5.5V when the IG switch is ON?

NO. → Defective A/C amplifier

YES → • Defective A/C control panel • Defective wire harness

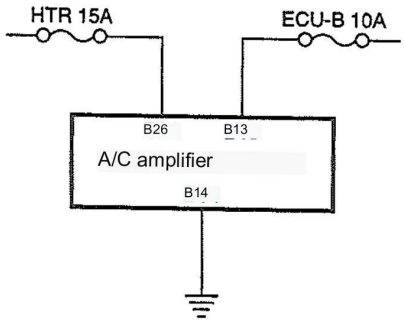
relationship connector

Connector B Connector A



A/C amplifier

Related circuit diagram



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steamed noodles

2 Blower motor does not rotate

Warm-up control or exercise wind control

What is not in God's favor?

(Water temperature gauge rises, within 15 seconds after engine start)

progress)

The blower does not rotate only in auto mode (it rotates if you operate it manually)

YES → · Defective wire harness · Defective A/C amplifier

NO.

HR power supply check

When the blower is OFF, is the voltage between the HR (B10) terminal and GND (B14) terminal of the A/C amplifier 10 to 14V?

NO. → earth inspection

After removing the heater main relay, is the voltage between terminals 1 and 5 on the car side W/H and body ground 10 to 14V?

YES → NO. → Defective wire harness

YES

HR operation check

When blower switch is ON, A/C a

The voltage between the HR (B10) and ↔ GND (B14) terminals of the amplifier is 1V.

Less than or equal to

NO. → Defective A/C amplifier

YES

*Heater main relay check

Is the heater main relay normal? (See "Individual inspection")

YES → NO. → Defective heater main relay

YES → Defective wire harness

*Heater main relay check

Is the heater main relay normal?

(See "Individual inspection")

NO. → Defective heater main relay

YES

Defective wire harness

17

relationship connector

Connector B

Connector A

13 12 11 10 9 8 7 6 5 4 3 2 1

26 25 24 23 22 21 20 19 18 17 16 15 14

8 7 6 5 4 3 2 1

16 15 14 13 12 11 10 9

A/C amplifier

3 2 1

5 4

Heater main relay

Related circuit diagram

HTR 50A

5

1 Heater 3 B10 main relay

A/C amplifier

2

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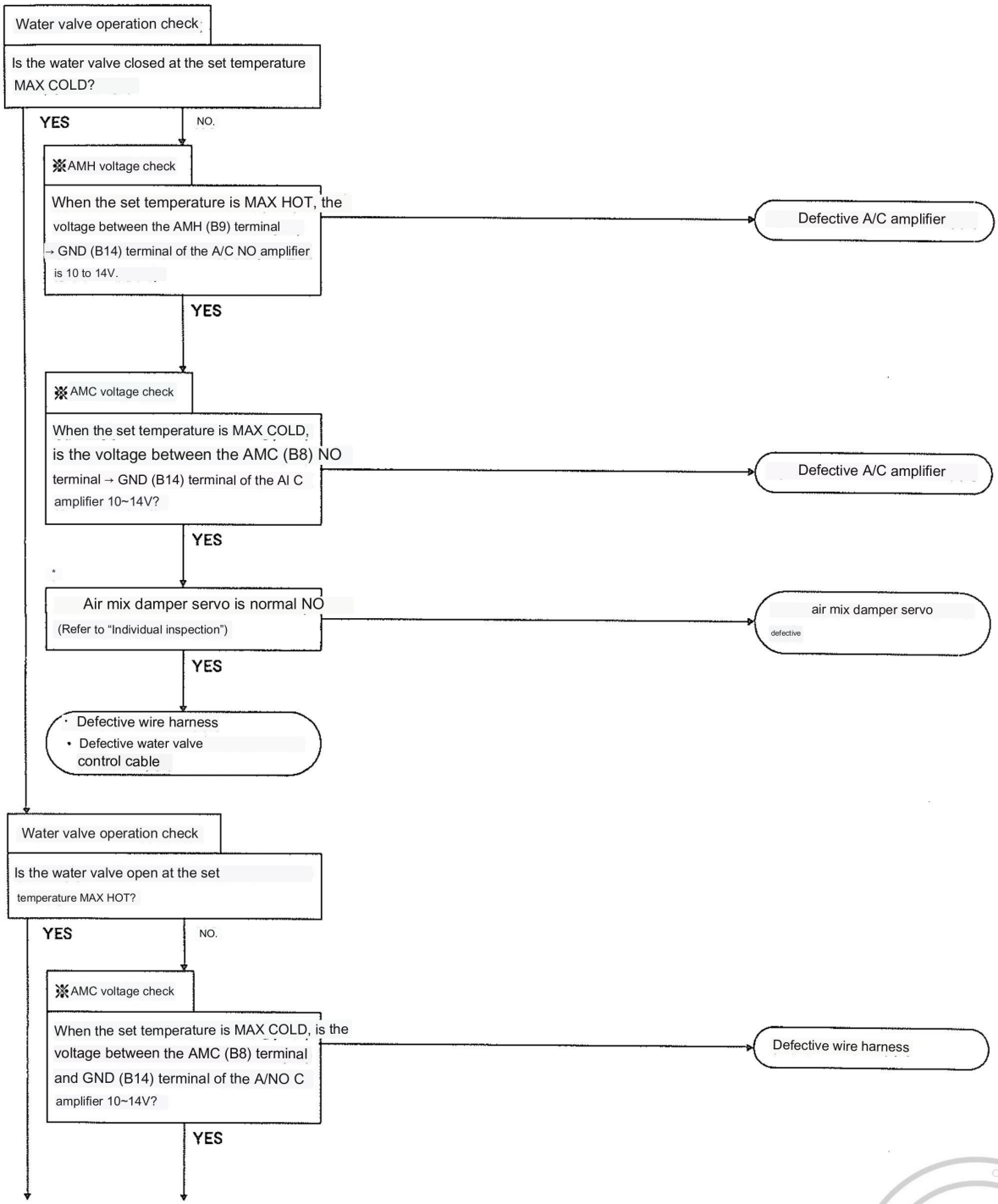
3	The room temperature is higher or lower than the set temperature (at 25℃)



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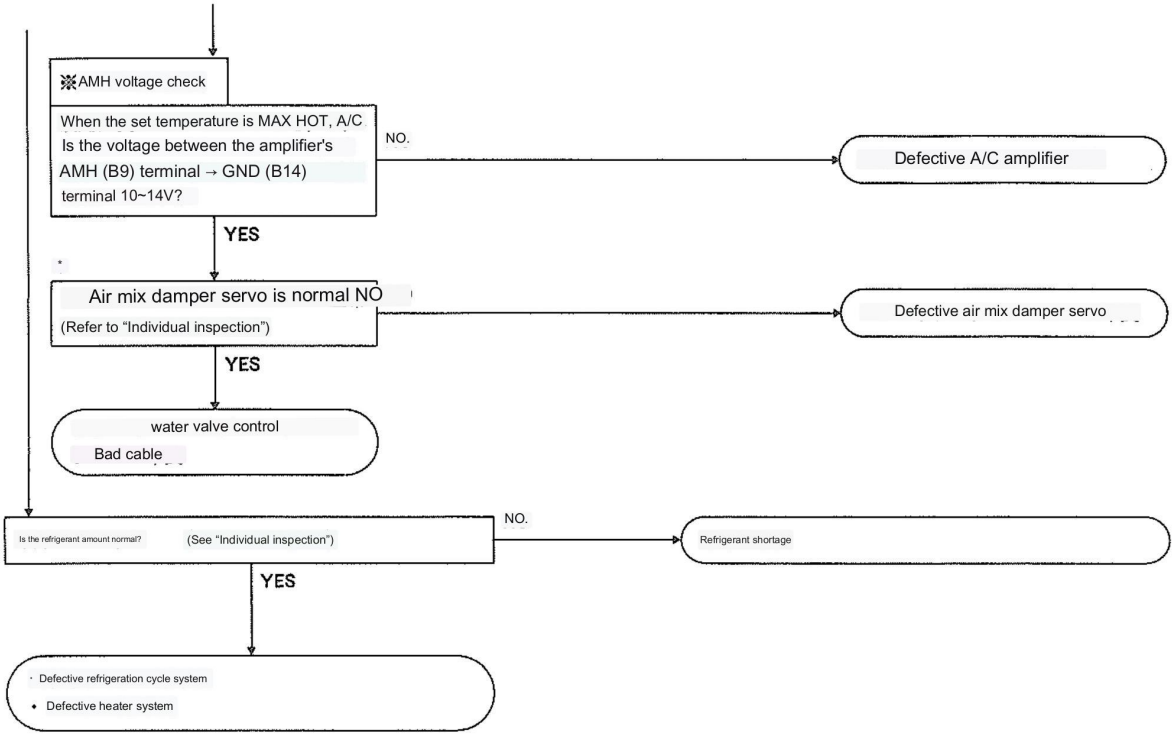

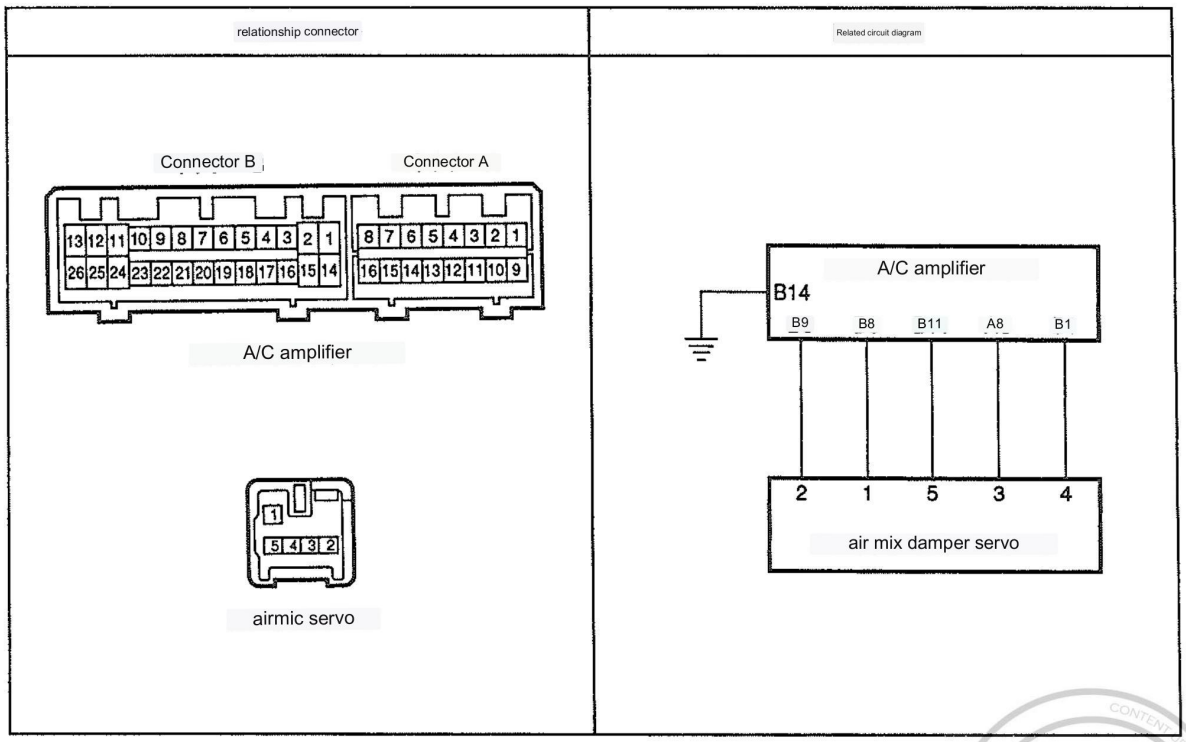

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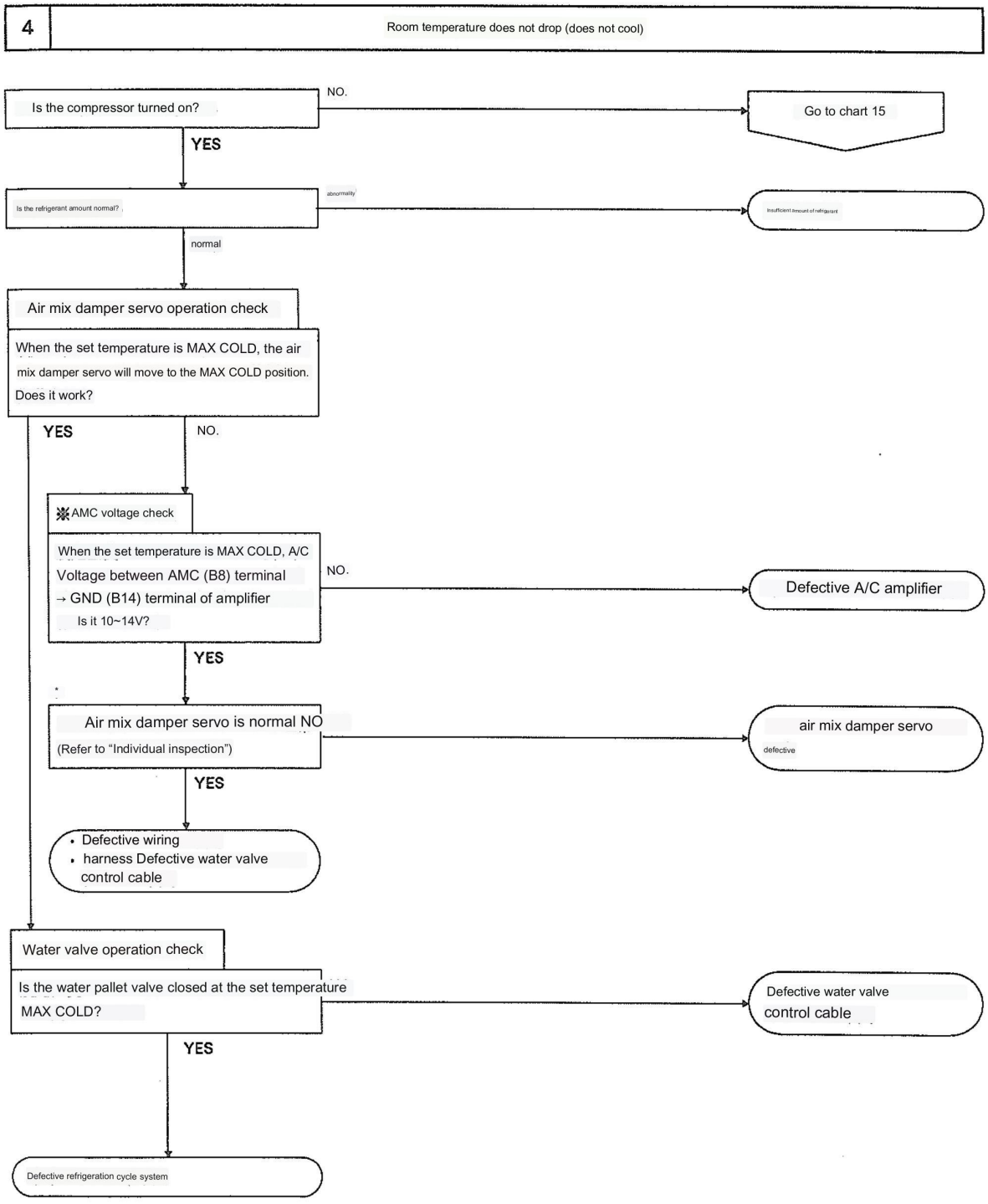

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times
Congratulations

5 Room temperature does not rise (does not warm up)

Air mix servo operation check

Air mix at set temperature MAX HOT.
Damper servo to MAX HOT position
Does it work?

YES — NO.

*AMH voltage check

When the set temperature is MAX HOT, is the voltage between the AMH (B9) terminal and GND (B14) terminal of the A/C amplifier 10 to 14V?

NO. → Defective A/C amplifier

YES

Air mix damper servo is normal NO
(Refer to "Individual inspection")

NO. → air mix damper servo defective

YES

water valve control
Bad cable

Water valve operation check

Water valve YES at set temperature MAX HOT
Is the door open?

NO. → Defective heater system

water valve control cable defective

relationship connector

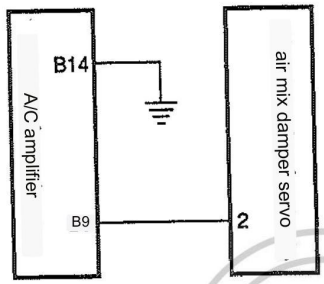
Connector B: 13 12 11 10 9 8 7 6 5 4 3 2 1 / 26 25 24 23 22 21 20 19 18 17 16 15 14

Connector A: 8 7 6 5 4 3 2 1 / 16 15 14 13 12 11 10 9

A/C amplifier

air mix damper servo: 1 / 5 4 3 2

Related circuit diagram



JB3640

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Conveyance box
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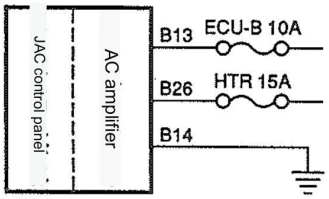
Malfunction phenomenon		Related circuit diagram
Diagnosis contents ① Diagnosis conditions ② Abnormal condition	Inspection area	
6 Does not receive a switch (it is displayed)		
① ② Does not accept all switches	• A/C amplifier A/C • amplifier power supply and ground system	
② When the following switches are pressed at the same time, the switch I will accept it (Refer to "Simultaneous press conditions" in the next section)	· A/C amplifier	

A/C control panel simultaneous press conditions

conditions	switch that does not accept
Press 3 or more at the same time	all switches
AUTO is pressed	DEF, OFF, MODE, FAN+, ※A/C
OFF is pressed	Prower start by FAN+, FAN-, DEE, OUT SIDE
Press MODE and DEF at the same time	MODE, DEF
pressing DEF	A/C, RECIRC/FRESH
Temperature control knob working	※OUT SIDE
In OFF mode	A/C, *Temperature control
Blower in LO mode	FAN−
Blower in HI mode	FAN+
Set temperature MAX HOT	※ TEST + (excluding when outside temperature is displayed)
Set temperature MAX COLD Medium	※ TEST (excluding when outside temperature is displayed)

*Vehicles equipped with JZ engine

17

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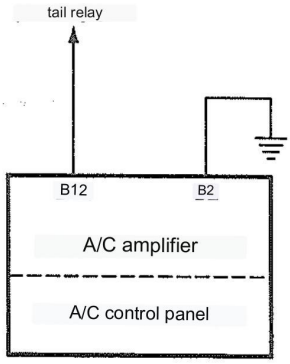
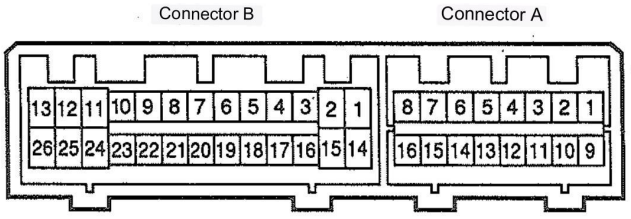
Congratulations

Malfunction phenomenon		Related circuit diagram
Diagnosis contents ① Diagnosis conditions ② Abnormal condition	Inspection area	
7	**LCD display, indicator display failure**	
① ② Display is incorrect or not displayed at all	· A/C amplifier	
① ② A specific display area or a specific indicator is not displayed. display incorrectly	· A/C control panel	
8	**LCD backlight does not light up**	
① ⑨ LCD display back lamp does not light up	· Lamp inside A/C control panel Outage · A/C control panel	
9	**Switch knob does not illuminate at night , Indicator does not dim at night**	
① Light switch ON ② Switch knob does not illuminate at night, indicator does not dim at night	· Tail lamp relay · Body ground	
① Light switch ON ②Switch knob does not illuminate at night	· Lamp inside A/C control panel is out · A/C control panel extension line	
① Light switch ON ② Does not dim at night	· A/C control panel · A/C amplifier	





A/C amplifier

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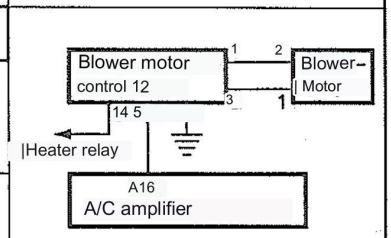
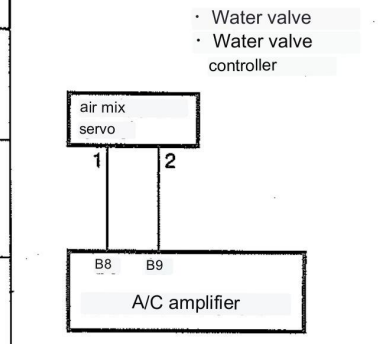
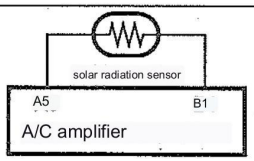
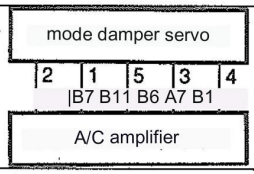
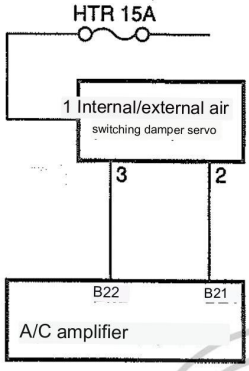
Problem phenomenon		Related circuit
Diagnosis details ① Diagnosis conditions ② Abnormal condition	Inspection area	
10 Blower motor won't shift speed		
① ② Prower motor does not shift speed	· Blower motor control	
① When the prower mode is AUTO ② Prower mode does not change gears	• A/C amplifier	
11 Air outlet temperature does not change		
① Setting temperature MAX COLD ② Between AMC GND terminals of A/C amplifier there is no voltage on	· A/C amplifier	
① When set temperature is MAX HOT ② There is no voltage between the AMH GND terminals of the A/C amplifier.	• A/C amplifier	
① ② Air outlet temperature does not change	· Air mix servo	
12 A/C doesn't work well when the sun shines (Solar radiation correction does not work)		
① ② Solar radiation correction does not work	• A/C amplifier · Solar radiation sensor	
13 Air outlet does not switch		
① ② Air outlet does not switch	· Mode damper servo · A/C amplifier	
14 Suction port does not switch		
① Manually operated in FRESH mode ② A/C amplifier AIF (B22) (B14) Voltage ↔ GND between terminals is 1V or more	· A/C amplifier	
① In RECIRC mode with manual operation ② Voltage between A/C amplifier's AIR (B21) GND (B14) terminals is IV or higher	· A/C amplifier	
① ② Suction port does not switch	· Inside and outside temperature switching damper servo · A/C amplifier link • system part	

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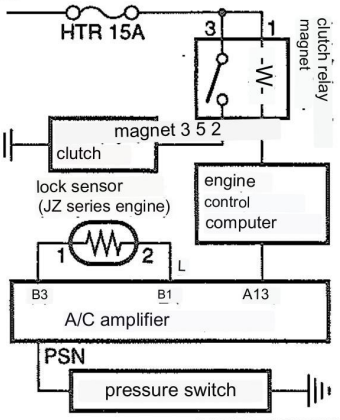
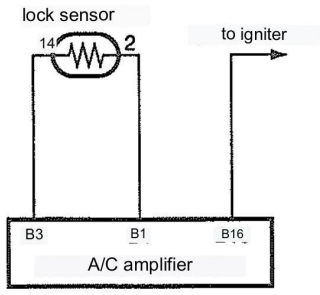
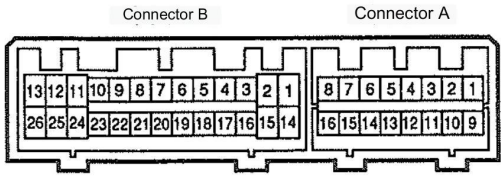
Congratulations

Malfunction phenomenon Examination contents ① Diagnosis conditions ② Abnormal condition	point area	related circuit 図
15 Compressor does not turn on		
① A/C switch ON ② A/C amplifier MGC (A13) GND (B14) Terminal voltage is 1V or less	· Fuse (HTR 15A) • Engine control computer	
① A/C switch ON ② A/C amplifier MGC (A13) GND (B14) Voltage between terminals is 1V or less	· A/C amplifier	
① 2 Compressor does not turn on	• pressure switch • refrigerant day · Magnetic clutch relay · Magnetic clutch	
16 A/C indicator flashes (JZ series engines)		
① When A/C switch is ON ② There is no compressor signal between the LOCK (B3) and GND (B14) terminals of the A/C amplifier.	· Compressor lock · Lock sensor · Belt tension	
① When A/C switch is ON ② There is no rotation signal between the A/C amplifier's IGN (B16) → GND (B14) terminals.	· Engine control computer · Engine rotation signal system	
① ② Indicator flashes	· Belt tension • Magnetic clutch · A/C amplifier	

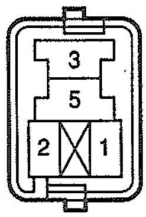




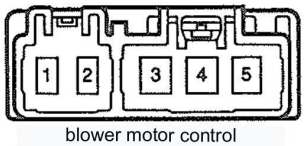


A/C amplifier

Compressor (ZJ series engine)



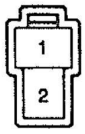
magnet clutch relay



blower motor control

· Mode damper servo
· Air mix damper servo

Internal/external air switching damper servo



blower motor

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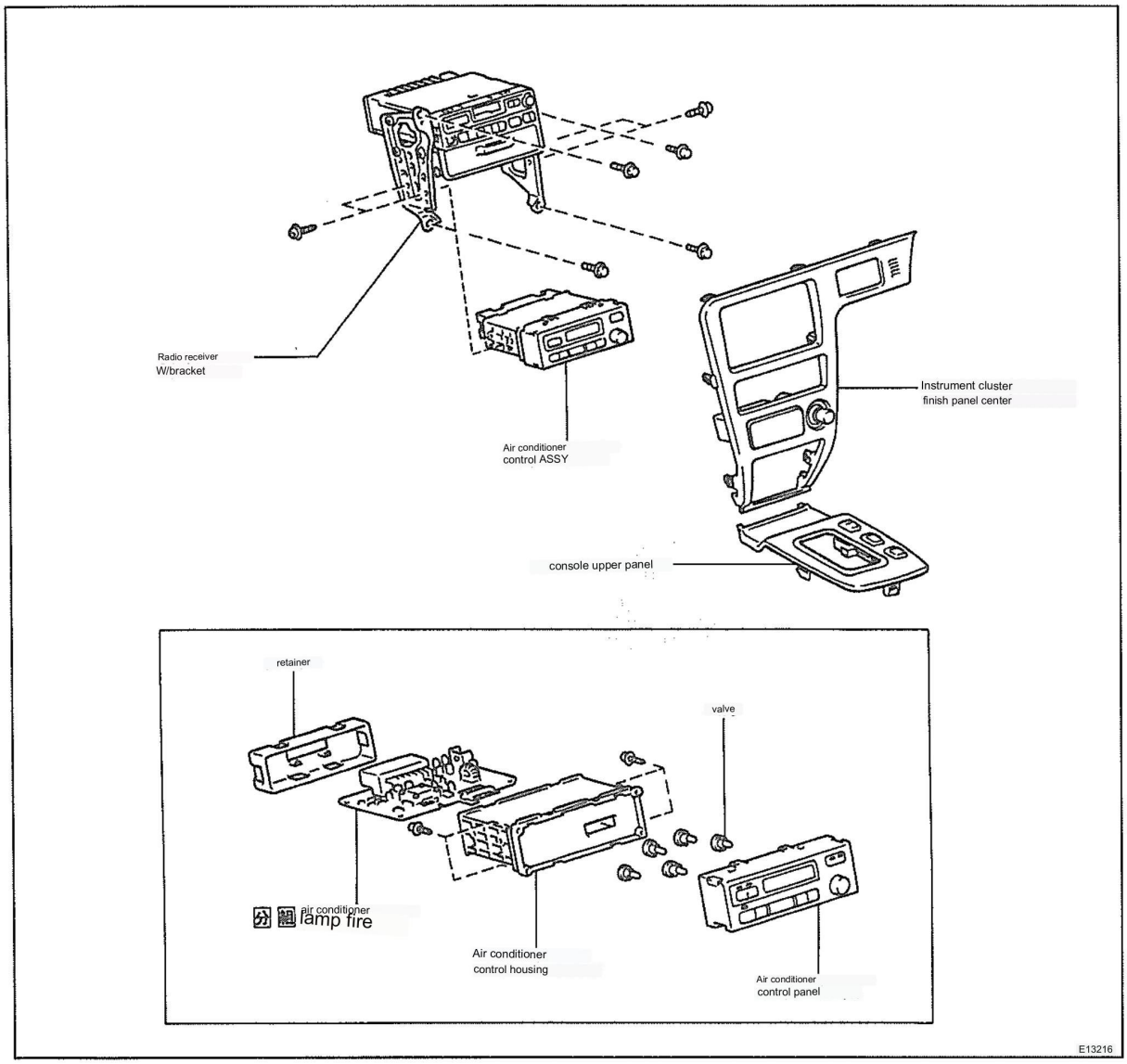
T0040240

air conditioner

CONTROL ASSY

Detachment configuration diagram



Air conditioner control ASSY

Points to note during disassembly work 17

1 Removing the air conditioner amplifier Handle

補給 the parts through the antistatic bag that is packaged with the air conditioner amplifier, and do not directly touch the elements or soldered parts on the board.

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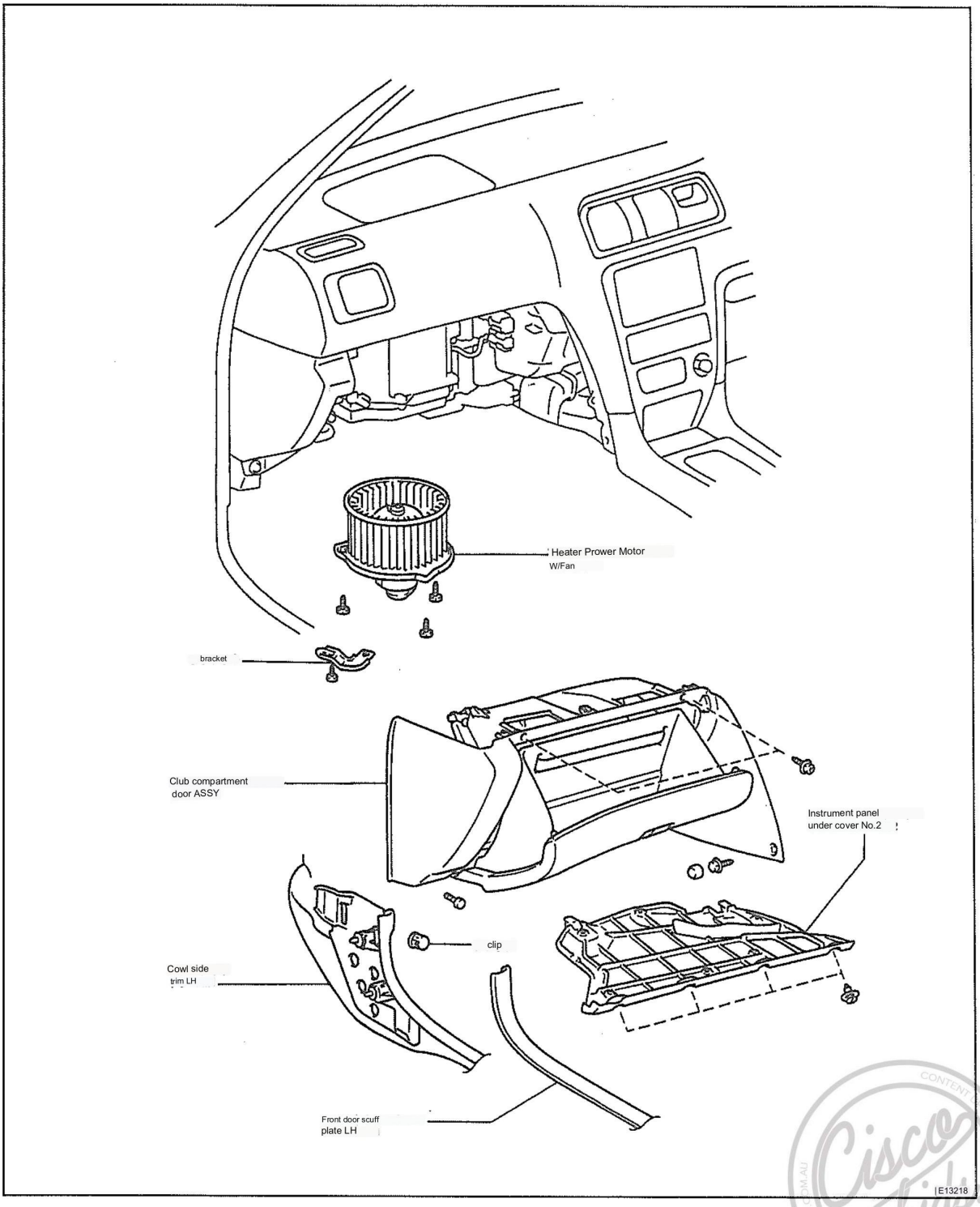
T0048247

Heater Blower Motor W/Fan

Delivery configuration diagram



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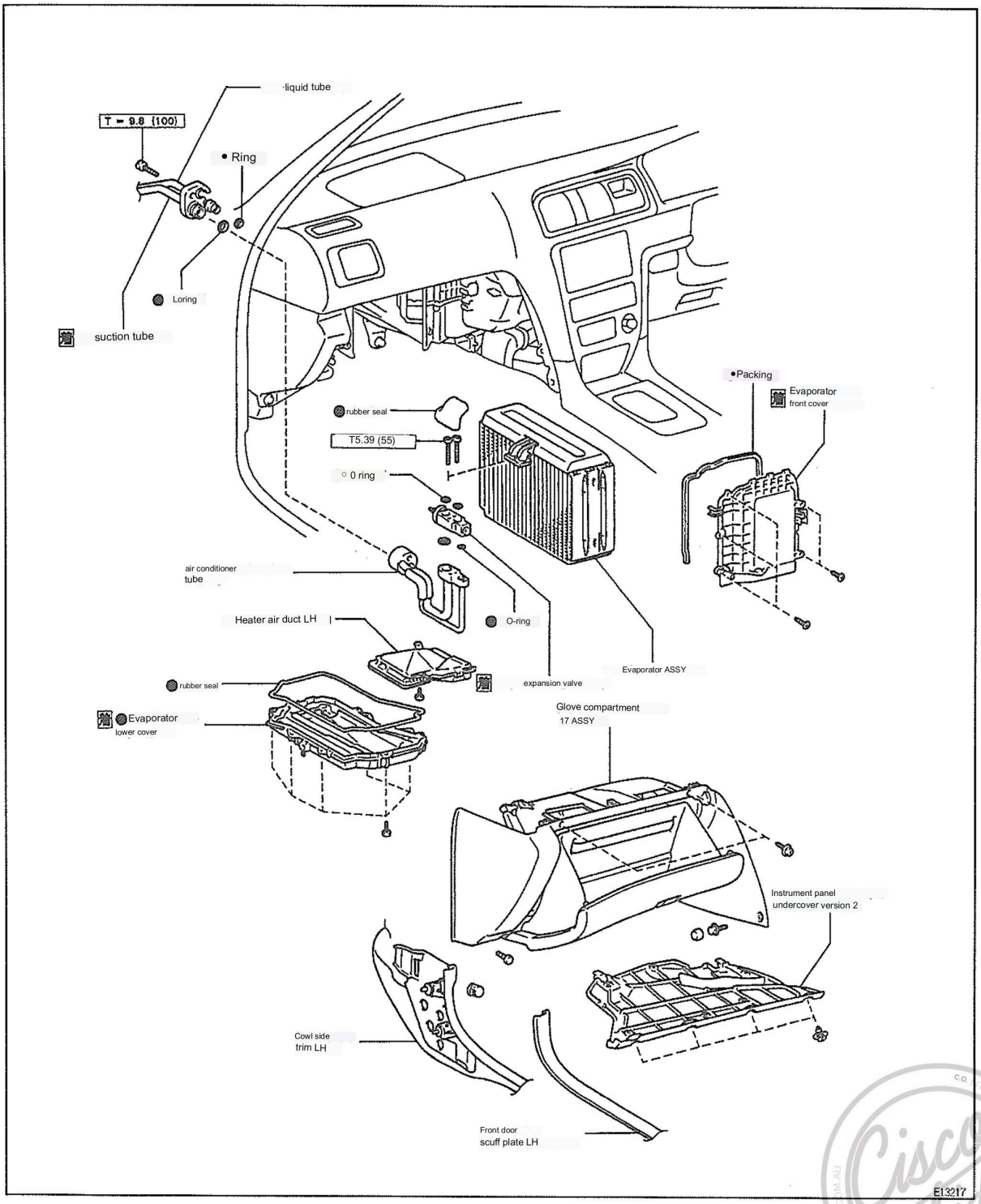
T0049245

Evaporator ASSY

Detachment configuration diagram



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Evaporator ASSY installation precautions

1 Installing the expansion valve

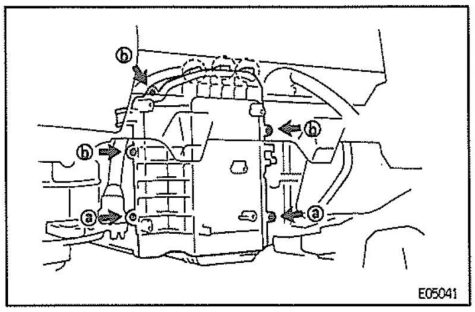
(1) Apply enough compressor oil to the new O-ring and joints.

Apply to.

(2) Using an exagon wrench (5mm), tighten the expansion valve.

Attach.

(3) Cover the expansion valve with new packing.



2 Installing the evaporator front cover

(1) Engage the tabs and assemble the evaporator front cover.

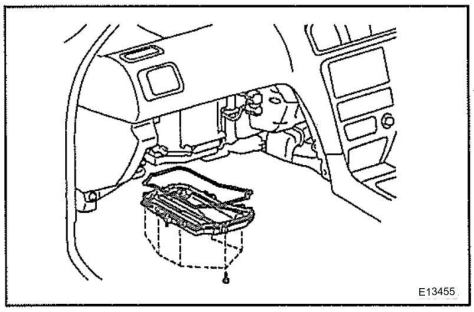
Let's go.

Align the wire harness of the evaporative sensor with the notch.

Do not allow it to get caught during

assembly. (2) After tightening the two screws shown in the figure, tighten the three screws.

tighten.



3 Installing the evaporator lower cover

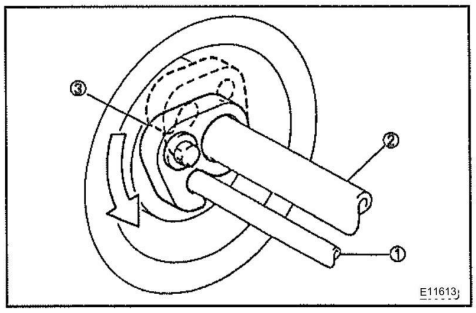
(1) Install a new evaporator lower cover. After pressing the

- evaporator sufficiently against the upper side of the heater case.

Assemble the work cover.

- After installing the lower cover, there is no gap between it and the heater case.

Make sure that.



4 Installing the suction tube and liquid tube (1)

Apply enough compressor oil to the new O-ring and thread.

Ru.

(2) Assemble the O-ring and the pipe to the cooler unit.

(3) Rotate the hook-type connector to the tightening position. (4) Make

sure that the seal hole and the axis of the pipe side joint are properly engaged.

Push it in and tighten the bolt. Assemble in the

order shown in the diagram.

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box Conveyance

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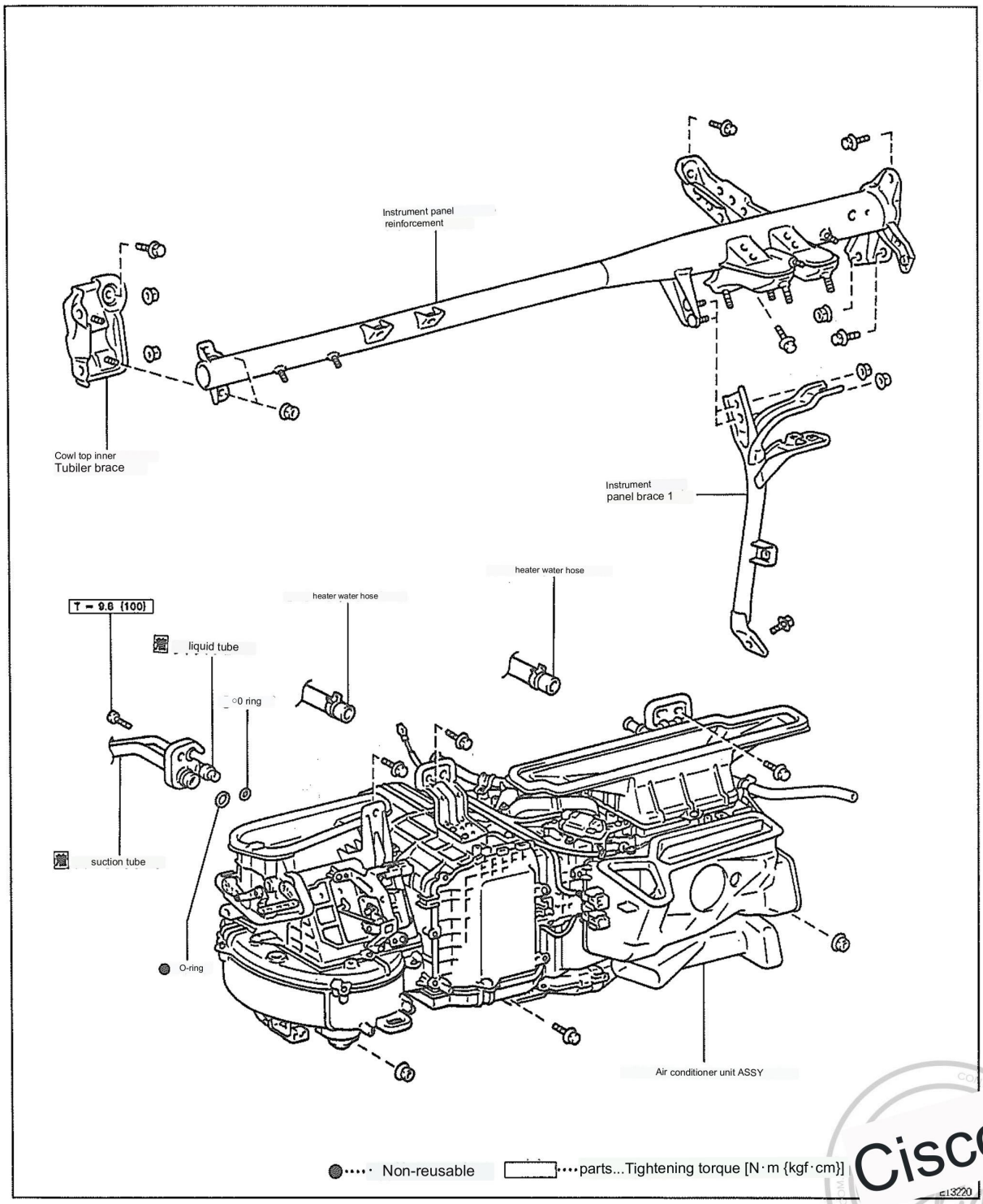
T0040248

Air conditioner unit ASSY

Detachment configuration diagram

For instrument panel installation/removal work, please refer to "Body" - "Instrument panel".

)



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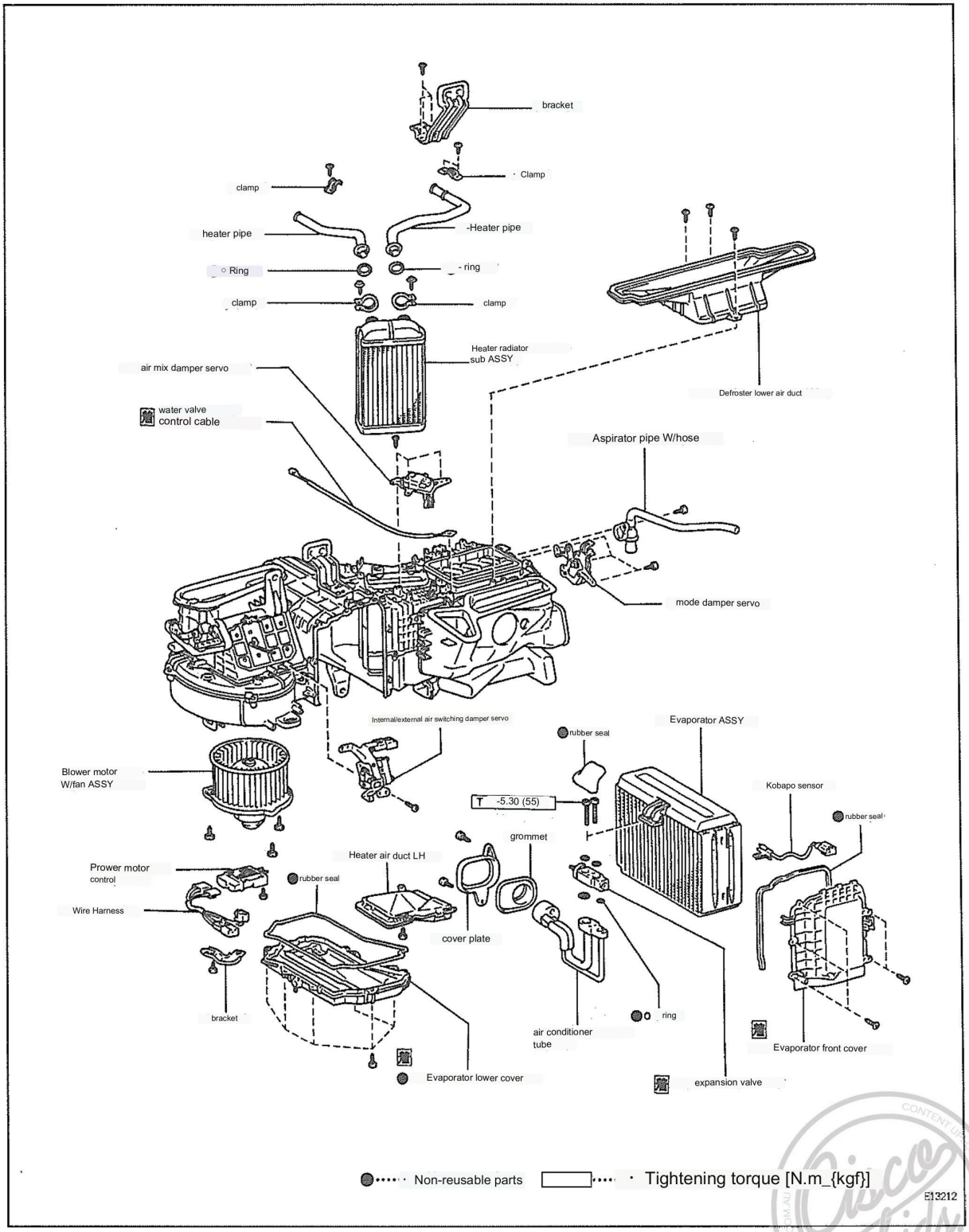
Exploded configuration diagram



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Air conditioner unit ASSY assembly

Points to remember

1 Expansion valve installation

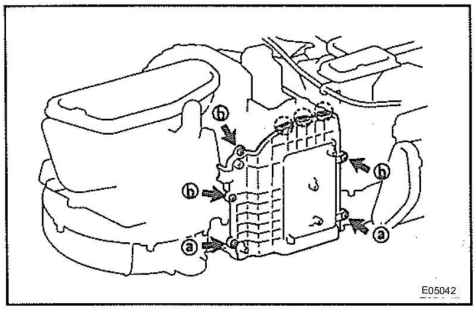
(1) Apply enough compressor oil to the new O-ring and joints.

Apply to. (2)

Using an exagon wrench (5mm), tighten the expansion valve.

Attach.

(3) Cover the expansion valve with new packing.



2 Installing the evaporator front cover

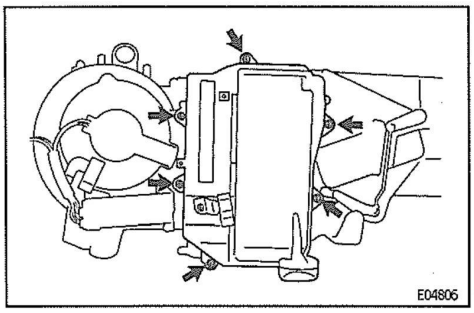
(1) Engage the tabs and assemble the evaporator front cover.

Let's go.

注意 Align the wire harness of the evaporative sensor with the notch.

Do not allow it to get caught during

assembly. (2) Tighten the two screws shown in ② in the diagram, then tighten the three screws.



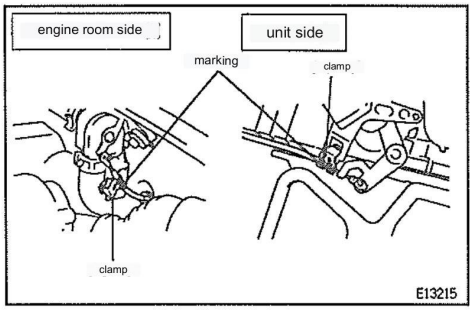
3 Evaporator lower cover installation

(1) Install a new evaporator lower cover.· After pressing

注意 the evaporator sufficiently against the upper side of the heater case,

Assemble the work cover.

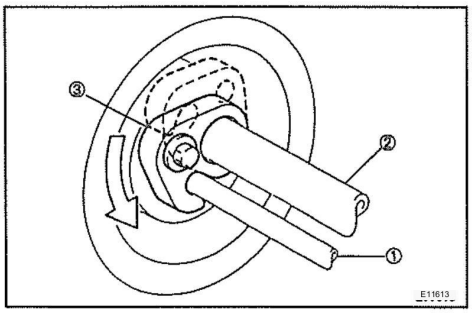
*After installing the lower cover, check that there is no gap between it and the heater case.



4 Installing the water valve control cable (1)

Clamp the water valve control cable so that the marking

part is hidden in the clamp part.



5 Suction tube and liquid tube installation

(1) Apply sufficient compressor oil to the new O-ring and

thread.

(2) Assemble the O-ring and the pipe to the cooler unit.

Rotate the hook-type connector to the tightened position. (4) Insert the seal hole and the axis of the pipe side joint until they are securely engaged, and then tighten the bolt. Assemble in the

注意 order shown in the diagram.

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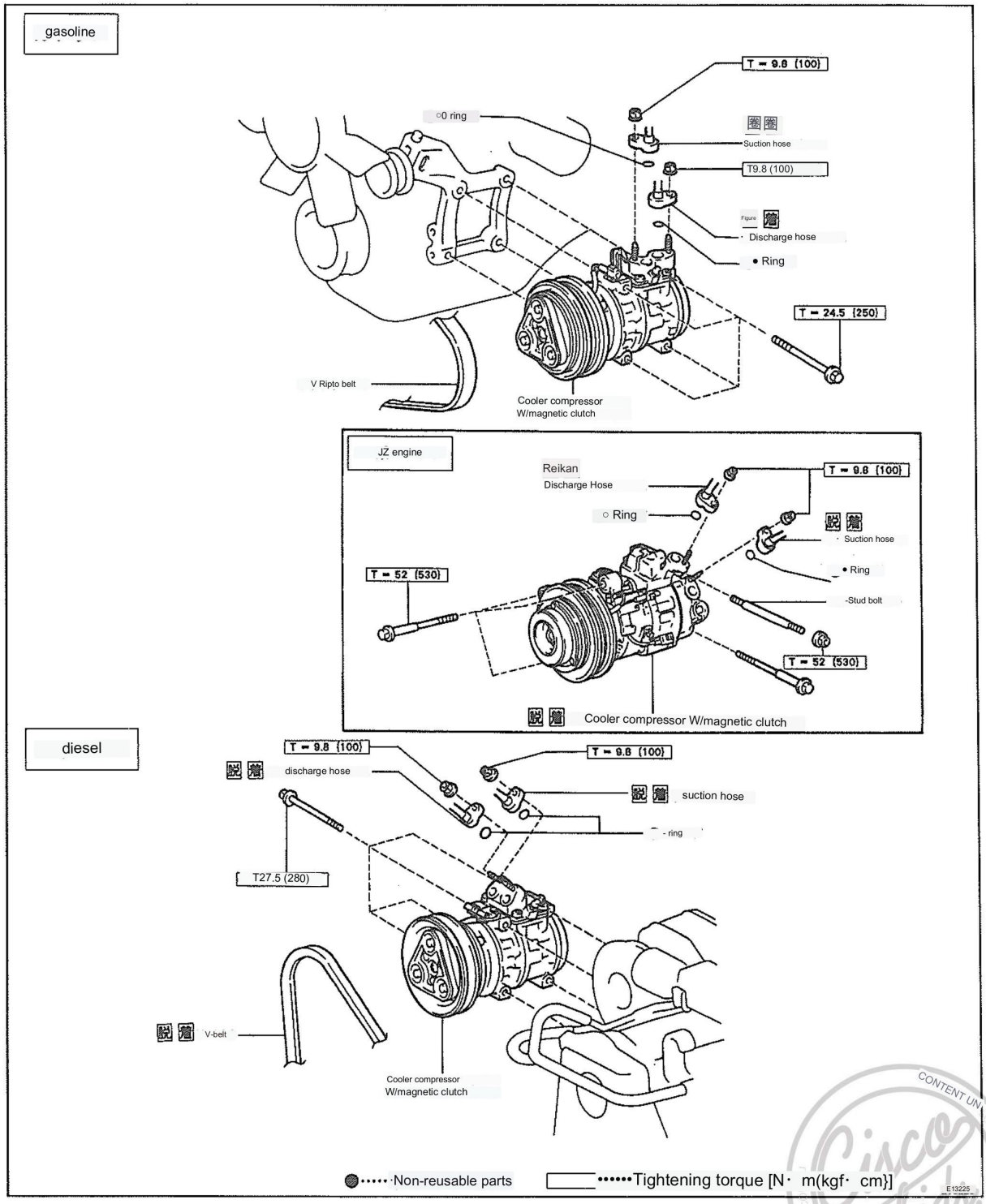
T0049250

cooler compressor

W/Magnetic clutch

Detachment configuration diagram



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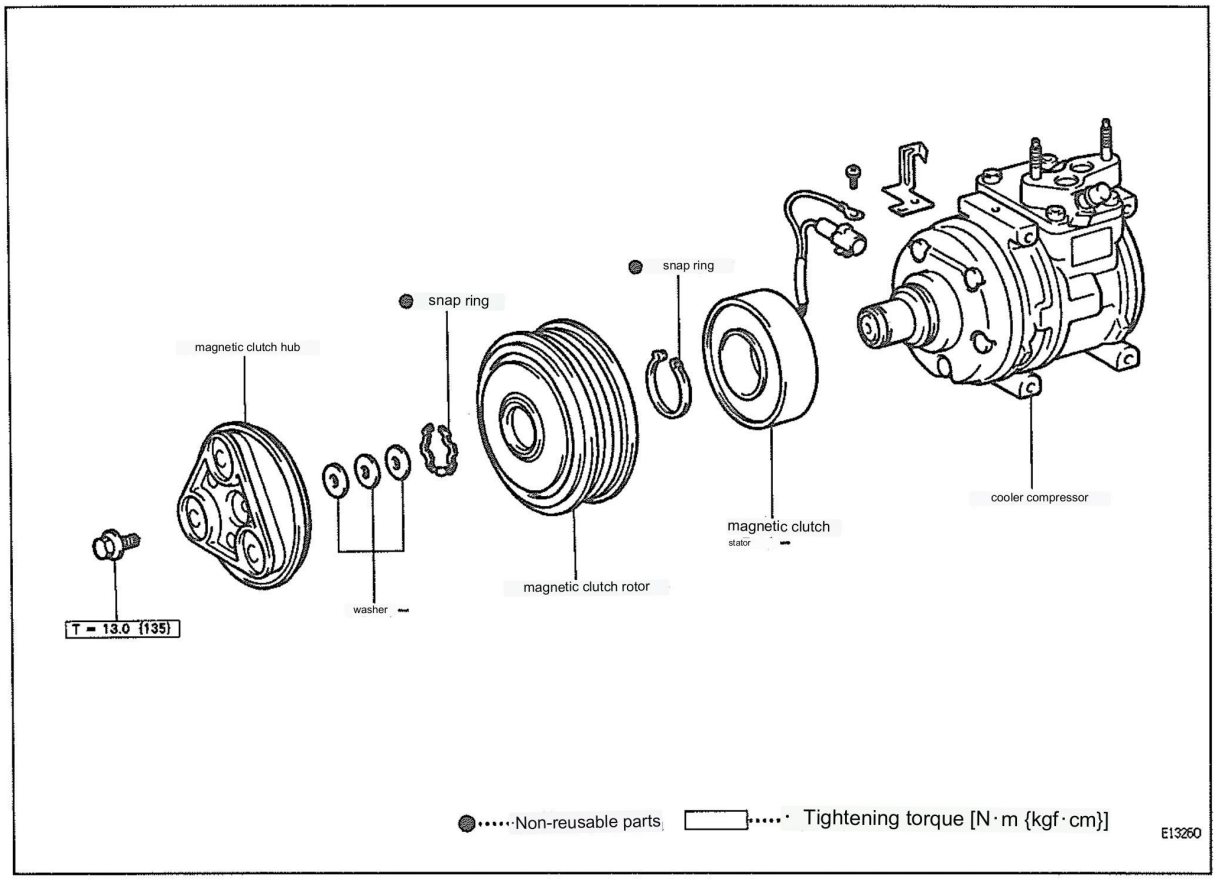
Exploded configuration diagram



cooler compressor

W/Points to note when removing the magnetic clutch

Strictly observe the precautions when installing and removing the cooler.

V-ribbed belt removal 1

(See "Engine" - "Engine adjustment")

2 Disconnect the suction hose and discharge hose To prevent dirt

and moisture from entering, disconnect the cooler hose and discharge hose.

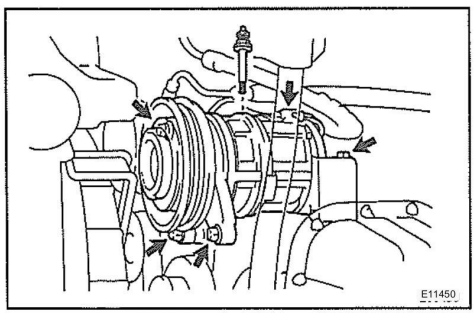
Apply vinyl tape to the joints of the compressor.

3 Cooler compressor W/magnetic clutch removed

(Vehicles equipped with JZ engine)

(1) Loosen the four bolts and nuts, and remove the stud bolt using a double nut.

(2) Remove the 4 bolts and remove the cooler compressor W/magnetic clutch.



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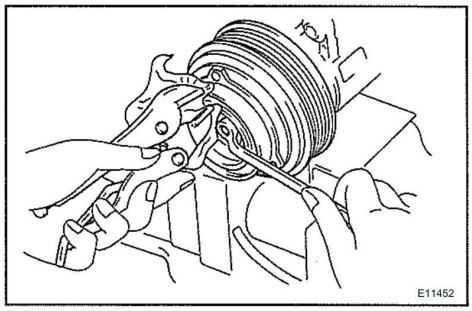


cooler compressor

W/magnetic clutch disassembly

1 Magnetic clutch hub removal

(1) Use vise pliers to secure the magnetic clutch hub.

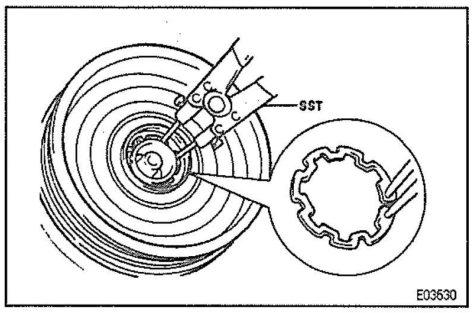
do.

Use a rag, etc. to avoid damaging the clutch hub.

(2) Remove the magnetic clutch hub mounting bolt.

(3) Magnetic clutch hub and washers (for adjustment, quantity

is not determined).



2 Removing the magnetic clutch rotor

(1) Use SST to remove the snap ring from the cooler compressor.

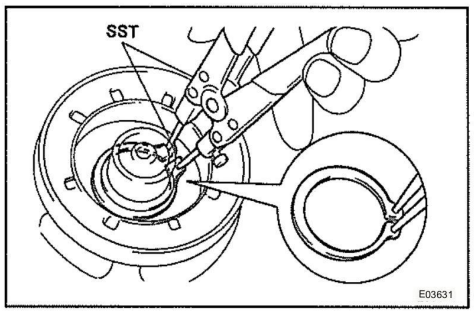
Remove it.

SST 09904-00010 09904-00050

Do not attach the bearing seal cover when removing the

snap ring.

(2) Remove the rotor.



3 Removing the magnetic clutch stator

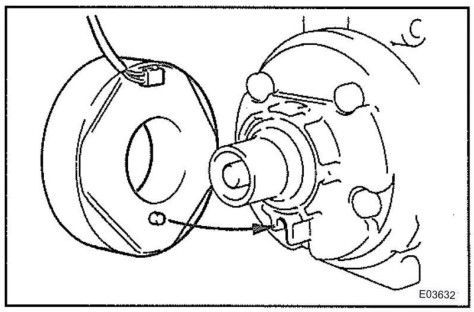
(1) Remove one screw and disconnect the clamp and connector.

vinegar.

(2) Remove the snap ring using SST and install the magnetic clutch.

Remove the stator.

S S T 09904-00010 09904-00050



cooler compressor

W/Magnetic clutch assembly

1 Installing the magnetic clutch stator

(1) Align the pins on the stator with the holes on the cooler compressor and assemble.

Find it.

(2) Using SST, install the new snap ring with the chamfered side

facing up.

S S T 09904-00010 09904-00050

(3) Connect the connector and attach the clamp with one screw.

2 Magnetic clutch rotor installation

(1) Install the rotor. (2)

Using SST, place the new snap ring with the chamfered side up.

Attach. SST

09904-00010 09904-00050

Avoid damaging the seal cover of the bearing when installing the

snap ring.

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box Conveyance

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Magnetic clutch hub installation

(1) Install the plate washer.

(2) Install the magnetic clutch hub.

(3) Use pipe pliers to secure the magnetic clutch hub.

do.

Use a rag, etc. to avoid damaging the clutch hub.

(4) Tighten the magnetic clutch hub mounting bolt.

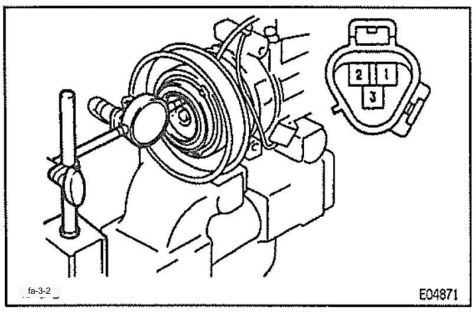
4 Magnetic clutch air gap inspection

(1) Set the dial gauge vertically on the magnetic clutch hub. (2) Connect the battery to the connector terminal 1 (1G-FE, 2L-TE) and 3

terminal (JZ engine) and the battery to the ground wire, and measure the air gap when the magnetic clutch is turned from ON to OFF. do.

Standard value 0.5±0.15mm

If it is outside the standard value, remove the magnetic clutch hub and adjust with a plate washer.



5 Check compressor oil level

(1) When replacing the cooler compressor with a new one, gradually drain the refrigerant from the service valve, and then drain the following amount of oil from the new cooler compressor before installing it.

Standards

(Oil capacity in new compressor: 160mL)

— (Amount of oil remaining in the removed compressor)

(Amount to be removed during

replacement) · When checking the compressor oil level, be careful when installing and removing the cooler.

Strictly comply with the rules.

- Since compressor oil remains in the vehicle's piping, the new

Install the compressor without draining the oil from it.

If this occurs, the amount of oil will increase, preventing replacement of the cold cycle,

resulting in poor cooling.· If the oil level of the removed compressor is low,

Check for oil leaks. W/Points

cooler compressor

to note when installing magnetic clutch

When installing the cooler compressor W/magnetic clutch, strictly observe the precautions when installing and removing the cooler and the tightening torque for the cooler piping.

1 Cooler compressor W/magnetic clutch installation (ZJ series engine)

(1) Attach 3 to 5 stud bolts and temporarily place the compressor.

(2) Tighten the 4 bolts to the engine block.

(3) Tighten the nut onto the stud bolt.

After tightening the nut on the stud bolt, the head of the bolt should protrude more than 11 mm

17

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Congratulations times

2 Suction hose and discharge hose installation

(1) Peel off the vinyl tape from the hose and compressor.

(2) Apply enough compressor oil to the new O-ring and joints.

Apply to.

3 V ribbed belt installation

(See "Engine" - "Engine adjustment")

Conveyance box

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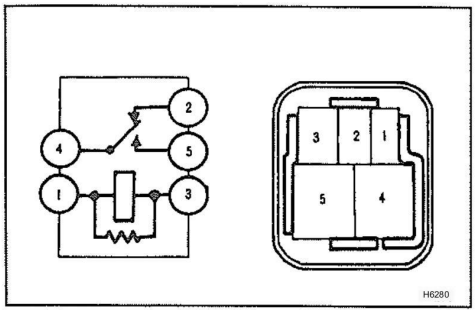


Individual inspection

heater main relay

1 Continuity check

(1) Check continuity between each terminal of the connector.

standard Between 1 terminal and 3 terminals... Continuity exists

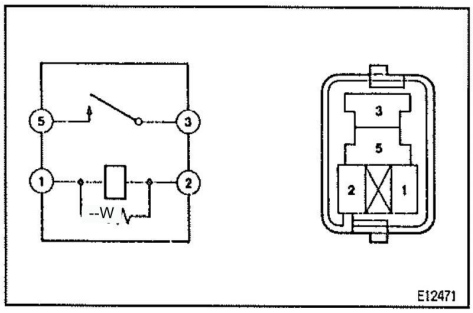
Between 2 terminals and 4 terminals... Continuity exists

Between 4 terminals and 5 terminals...No continuity

(2) When applying battery voltage between terminals 1 and 3 of the connector, check continuity between terminals 2 and 4 and between terminals 4 and 5.

Standard between 2 terminals and 4 terminals... No continuity

Between 4 terminals and 5 terminals...Continuity exists



magnet clutch relay

1 Continuity check

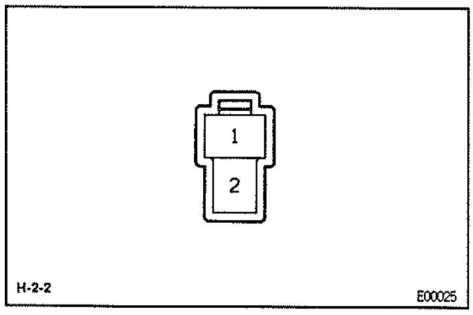
(1) Check continuity between each terminal of the connector.

Standard between 1 terminal and 2 terminals... Continuity exists

Between 3 terminals and 5 terminals... No continuity

(2) When applying battery voltage between connector terminals 1 and 2, check continuity between terminals 3 and 5. Hanaka

road available



blower motor

1 Speech inspection

(1) When connecting the battery to terminal 1 and the battery to terminal 2, confirm that the motor rotates in the direction of the arrow at the rear of the motor without any abnormal noise. (2) Measure the current while the motor is rotating (no load).

Standard 3A or less

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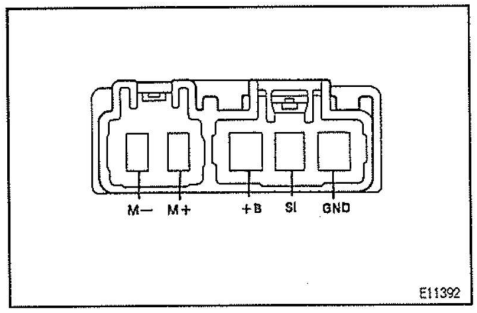
Technical report



blower motor control

1 Crop inspection

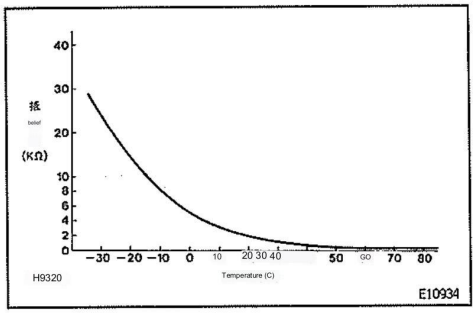
(1) With the connector connected, measure the voltage at each terminal from the back of the connector or at the SI terminal between each terminal and body ground.

Hanaka

Contact 統 terminal		Measuring conditions	Standards
tester ⊕	tester ⊖		
+B	body earth	IG switch ON turns blower OFF ON	0V→10~14V
M+	M-	blower fan manual in control Lo→M2 (*1) M1 (2) →HI	Change from 4.0V7.9V →13.0V
S.I.	body earth	LoM→HI with blower fan manual control	Changes from 13.5V 2.2V → 0V
GND	body earth	Mizodori inspection	Continuous continuity

*1 With LCD display 老 ※ 2 LCD display

JB3695

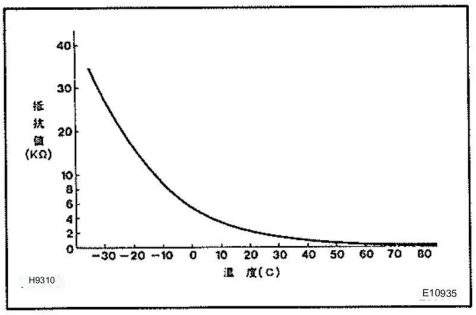


Inside air sensor, outside air sensor

1 Resistance measurement

(1) Measure the resistance between each terminal of the connector.

Standards At 25°C••••• 1.6~1.8kΩ



After evaporation sensor

1 Resistance measurement

(1) Measure the resistance between each terminal of the connector.

Standards At 0°C...4.6~5.1kΩ

At 15°C...2.2~2.6kΩ

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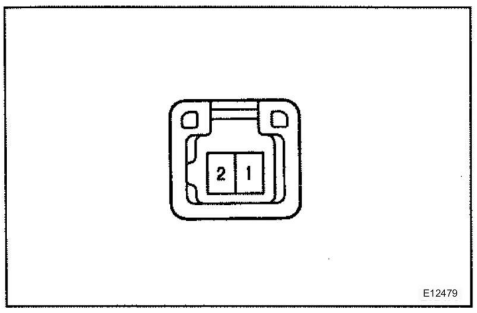
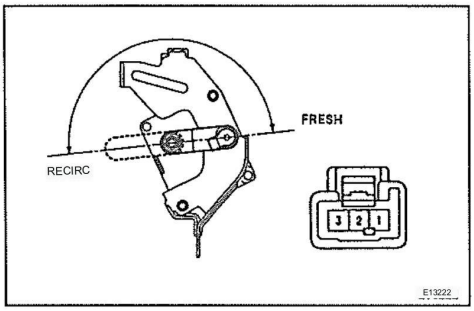


solar radiation sensor

1 Operation check

(1) Set the tester to the 20kΩ range.

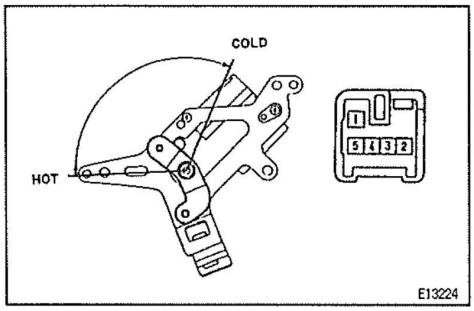
(2) When connecting a tester to terminal 1 and terminal 2 of the connector, check that the tester is set to other than OVER 1. (3) Connect a tester to 1 terminal of the connector, and a tester to 2 terminals of the connector. When you do this, make sure the tester is OVER 1. (4) In the state of (3), when the light of the inspection light approaches, confirm that the tester shows a value other than OVER 1. Internal/



external air switching damper servo

1 作動点検

(1) When connecting the battery to terminal 1 and terminal 2 of the connector, check that the arm rotates smoothly from the FRESH position to the RECIRC position. (2) When connecting terminal 4 of the battery to terminal 1 of the connector, and terminal 3 of the ⊖battery to terminal 3 of the battery, check that the arm rotates smoothly from the RECIRC position to the FRESH position.



air mix damper servo

1 Operation check

(1) Check that the arm rotates smoothly from the COLD position to the HOT position ⊖when connecting the + of the battery to the 2nd terminal of the connector and the + of the battery to the 1st terminal of the connector.

(2) When the + of the battery is connected to the 1st terminal of the connector and the + of the battery is ⊖connected to the 2nd terminal of the connector, the arm will slide from the HOT position to the COLD position. Make sure it rotates smoothly.

2 Resistance measurement

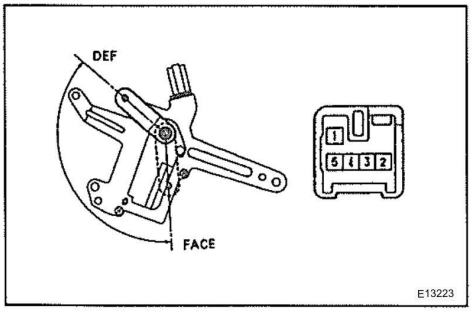
(1) Measure the resistance between the 4 and 5 terminals of the connector.

Standards 4.8~7.2kΩ

(2) Measure the resistance value between connector terminals 3 and 5 when the arm is stopped at the COLD or HOT position.

Standards HOT side...0.9~1.5kΩ
COLD side 3.8~5.8kΩ

(3) While the arm is rotating, confirm that the resistance value between terminals 3 and 5 of the connector changes continuously.



mode damper servo

1 Operation check (1) Check that the arm rotates smoothly to the DEF FACE position when the battery ④ is connected to the 2nd terminal of the connector and the battery is connected to the 1st terminal of the connector.

(2) Check that the arm rotates smoothly to the FACE DEF position when the battery is connected to terminal 1 of the connector and battery 4 is connected to terminal 2 of the connector.

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2Resistance measurement

(1) Measure the resistance between terminals 4 and 5 of the connector.

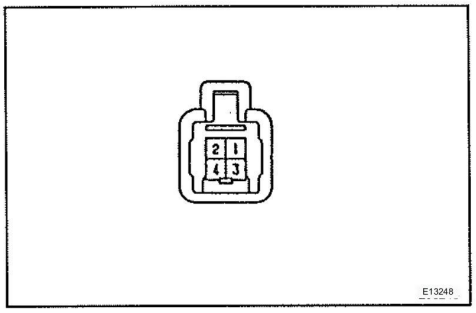
Standard value 4.8~7.2kΩ

(2) Measure the resistance between terminals 3 and 4 of the connector when the arm is stopped at the FACE or DEF position. DEF side· · · · · · 0.9~1.5kΩ

FACE side...3.8~5.8kΩ

(3) While the arm is rotating, the resistance values between connector terminals 3 and 5 are connected.

Confirm that it changes continuously.



swing servo

JZ engine

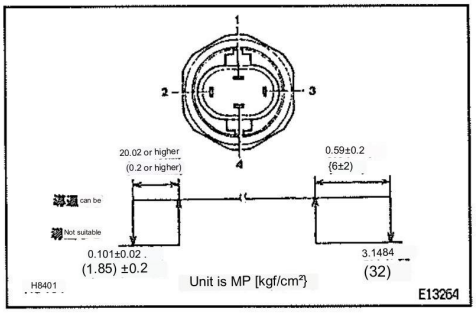
1 Operation check

(1) When connecting the battery's ⊕ to the 3rd terminal of the connector and the battery's ⊕ to the 4th terminal of the connector, check that the arm swings smoothly.

2 Lighting check

(1) Connect terminal 4 of the battery to terminal 2 of the connector, and terminal 4 of the battery to terminal 1 of the connector.

When you connect the sun, make sure the LED lights up.



pressure switch

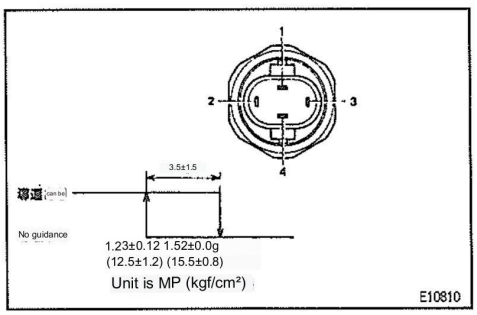
2JZ-GE, 1JZ-GTE

For high and low height

1 Continuity check

(1) Check continuity between 1 and 4 terminals of the connector. Standard (reference)

Depending on the refrigerant pressure, it will be as shown in the figure.



For medium pressure

1 Xie Tong inspection

(1) Check continuity between 2 and 3 terminals of the connector. Standard (reference)

Depending on the refrigerant pressure, it will be as shown in the figure.

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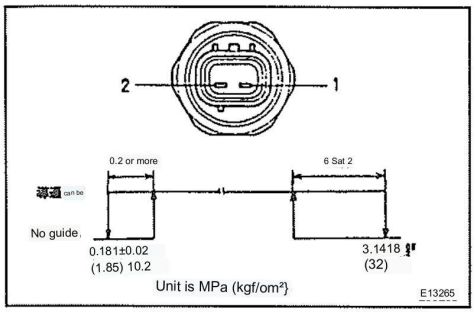

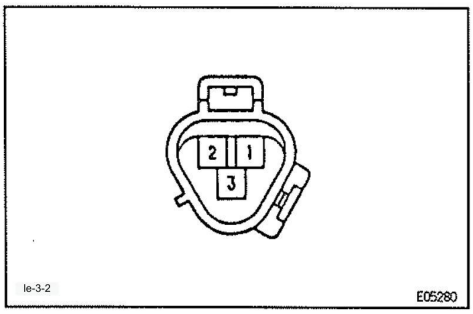

1 JZ−GE, 1 G−FE, 2 L−TE

1 Maritime inspection

(1) Check continuity between 1 and 2 terminals of the connector. Standard (reference)

Depending on the refrigerant pressure, it will be as shown in the figure.

magnetic clutch

JZ engine

1 Operation check

(1) When connecting the battery's ground wire to the battery's ground ⊕, wire to the connector terminal 3 of the magnetic clutch, make sure that you hear an operating sound and that the magnetic clutch hub and rotor are locked.

compressor lock sensor

1 Resistance check

(1) Measure the resistance between 1 and 2 terminals of the connector.

Standard 1850 (20°C)

1G-FE, 2L-TE

(1) Connect the battery to the connector 1 terminal of the magnetic clutch.

When I connect the battery to the ground wire, I hear an operating sound.

Make sure the magnetic clutch hub and rotor lock.

Ru.

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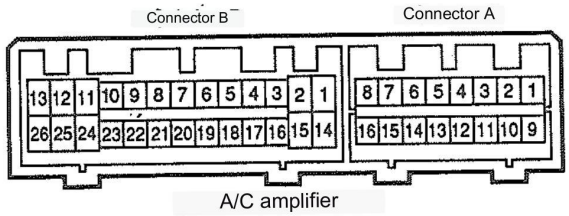
air conditioner amplifier

1 Inspection of workmanship

(1) With the connector connected, remove each terminal and button from the back of the connector.

Check voltage and continuity between ground and ground. (2) Use an oscilloscope to confirm that pulses are generated between each terminal and body ground.



A/C amplifier

Vd-42-2-A

connector	端子番号 terminal princess number		Measurement item	tester connection ⊕ ↔ ⊖	Measurement condition	基準値	Faulty parts if outside of standard values (including connectors and W/H)
A	1	RAM	Waveform	A1 ↔ B14	Always	Pulse generation (serial data)	A/C amplifier
	3	TAM	電圧	A3++ B1	Outside temperature 25℃	1.35 1.75V	outside temperature sensor
					Outside temperature 40℃	0.85 ~ 1.25V	
	4	T.R.	Densho	A4+ B1	Indoor temperature 25℃	1.8~2.2V	internal air sensor
					Indoor temperature 40℃	0.85 ~ 1.25V	
	5	T.S.	Kansho	A5 → B1	Solar radiation sensor part Shade	0.8V or less	solar radiation sensor
					Solar radiation sensor unit Apply solar radiation or light	4.3V	
	6	T.E.	Densho	A6 ↔ B1	Evaporator atmosphere temperature 0℃	2.0~2.4V	evapo sensor
					Evaporator ambient temperature 15℃	1.4 1.8V	
	7/8	TPO	Densho	A7B1	Air outlet DEF FACE	1.0 → 4.0V	mode potentiometer
		T.P.	Densho	A8+ B1	Change temperature setting from MAX HOT to MAX COLD	1.0 → 4.0V	air mix potentiometer
	9	PSW	電圧	A9 → B14	———	1.0V or less	• A/C amplifier ·pressure switch
					Disconnect the pressure switch connector	10 ~ 14V	

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box Conveyance

connector	端子番号	terminal notes 号	Measurement item	tester connection ⊕ ↔ ⊖	Measuring conditions	Standards	Faulty parts if outside of standard values (including connectors and W/H)
A	10	ACI	Voltage	A10 ↔ B14	A/C compressor ONOFF	10~14V → 1V or less	• Magnetic clutch relay · Magnetic clutch
	13	MGC	電圧	A13 ↔ B14	A/C compressor OFF→ON	10~14V → 1V or less	· A/C amplifier · •Engine control computer
	14	EFII	Waveform	A14 day 14	常 Time	Pulse generation (serial data	Engine control computer
	15	EFIO (JZ series engine)	Waveform	A15B14	Always	Pulse generation (serial data)	A/C amplifier
	16	BLW	Waveform	A16 ↔ B14	Blower fan OFF ON	Pulse generation (duty waveform)	· Blower motor • Blower motor control
B8	1	SG	Junior pass	B1 ↔ body earth	at that time	With guidance	body earth
	2	ILL−	guidance	B2 ↔ body earth	Always	With guidance	body earth
	3	LOCK (JZ series engine)	Waveform	B3 B14	A/C compressor ON	Pulse generation	compressor lock
	4	SWIG (JZ series engine)	guidance 通	B4 ↔ body earth	Mode control switch FACE or BILEVEL, when blower switch is ON	導通 can be	• A/C amplifier · Body ground
	6	AOD	Densho	B6 B14	Mode control switch FACE → DEF	1V or less → 10~14V	· A/C amplifier · A/C control
	7	A.O.F.	Densho	B7 B14	Mode control switch DEF FACE	1V or less →10~14V	• A/C amplifier • A/C control
	8	AMC	Zhuangzhuang	B8 ↔ B14	temperature settings MAX HOT → MAX COLD	1V or less → 10~14V	· A/C amplifier • A/C control
	9	AMH	電圧	B9 ↔ B14	temperature settings MAX COLD → MAX HOT	Below AV →10~14V	
	10	HR	Yosho	B10 ↔ B14	Blower motor OFF→ON	10 ~ 14V → 1V or less	· Heater main relay A/C amplifier.
	11	S5	Kansho	B11 B1	Always	4.5 ~ 5.5V	A/C amplifier
	12	ILL+	Densho	B12 ↔ B14	Light switch OFF → ON	1V or less →10~14V	tail lamp relay
	13	B	Densho	B13 ↔ B14	Always	10 ~ 14V	Fuse (ECU-B 10A) blown
	14	GND	quasi B14"	← Body Earth	at that time	With guidance	body earth

17

steamed noodles
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connector	ID	terminal princess number	Measurement item	tester connection ⊕ ↔ ⊖	Measurement condition	standard beliefs	Faulty parts when outside standard values (including connectors and W/H)
B	15	SPD (JZ series engine)	Waveform	B15 B1	Running	Pulse generation	速 degree system
	16	IGN (JZ engine)	Waveform	B16B14	engine running	Pulse generation	Engine rotation signal system
	21	AIR	Densho	B21 → B14	Inside/outside air selection switch FRESH → RECIRC	10~14V → 1V or less	・A/C control panel ・A/C amplifier ・Inside/outside air switching damper servo
	22	A/F	Densho	B22 ↔ B14	Inside/outside air selection switch RECIRC→FRESH	10~14V → 1V or less	
	23	RDFG	Voltage	B23 ↔ B14	Rear defogger switch OFF→ON	10~14V → 1V or less for 15 minutes	•A/C control panel • A/C amplifier
	26	IG+	電圧	B26 B14 IG switch ON		10~14V	Fuse (HTR 15A) blown

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18 Toyota Electro Multi Vision

"Wide multi AV Station" 18-2

Preparations... 18-2

Parts layout diagram 18 – 2

Radio receiver ASSY (Wide Multi AV Station) ··· 18-3

Detachable exploded configuration diagram 18 – 3

Navigation computer ASSY 18-4

Detachment configuration diagram 18 – 4

Television antenna amplifier & antenna selector... 18-5

Points to note when installing and removing television antenna amplifier & antenna selector... 18-5

GPS antenna ASSY 18-5

Exploded diagram 18 – 5

Troubleshooting/ 18-6

How to proceed with troubleshooting 18-6

回路図 18 – 7

Troubleshooting chart by phenomenon 18-9

Diagnosis 18-12

Diagnosis operation list 18-12

How to start and release diagnosis 18-12

System check 18 – 13

Diag memory 18-13

Diagnosis code list 18-14

Memory clear 18-16

switch inspection 18 – 16

Picture check 18 – 17

Troubleshooting chart 18-18

単体点検 18 – 20

Radio receiver ASSY ("Wide Multi AV Station") ··· 18-20

Navigation computer.....18-23

Stereo component amplifier ASSY 18-24

TV antenna amplifier & antenna selector...18-26

18

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T0049618

"Wide

Multi AV Station"

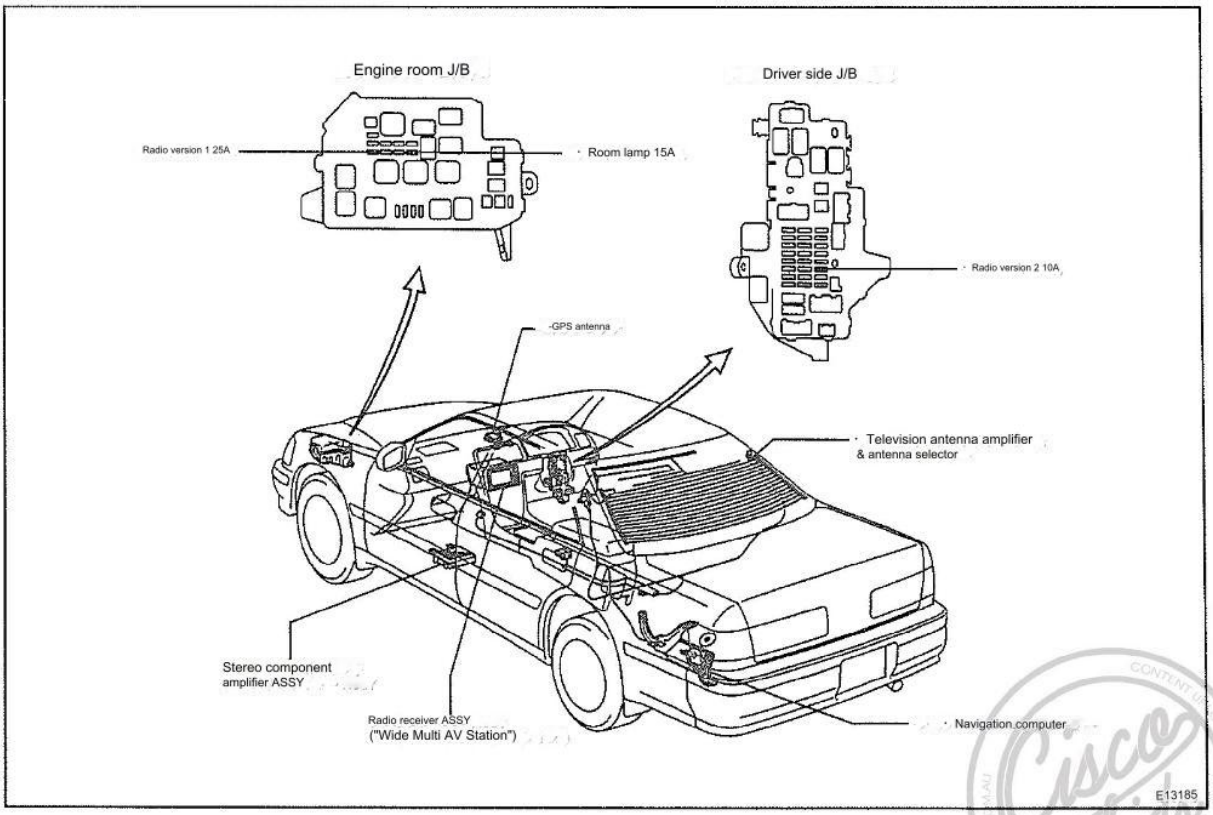
Preparations

instrument

	09082-00012 toyota electrical tester	For inspection of each part
	(09083-00060) Mini test lead	For connector inspection
	09083-00080 Toyota Electrical Tester AC/DC Adapter	For AC inspection
oscilloscope 20501		For waveform inspection

T0049618

Parts layout diagram



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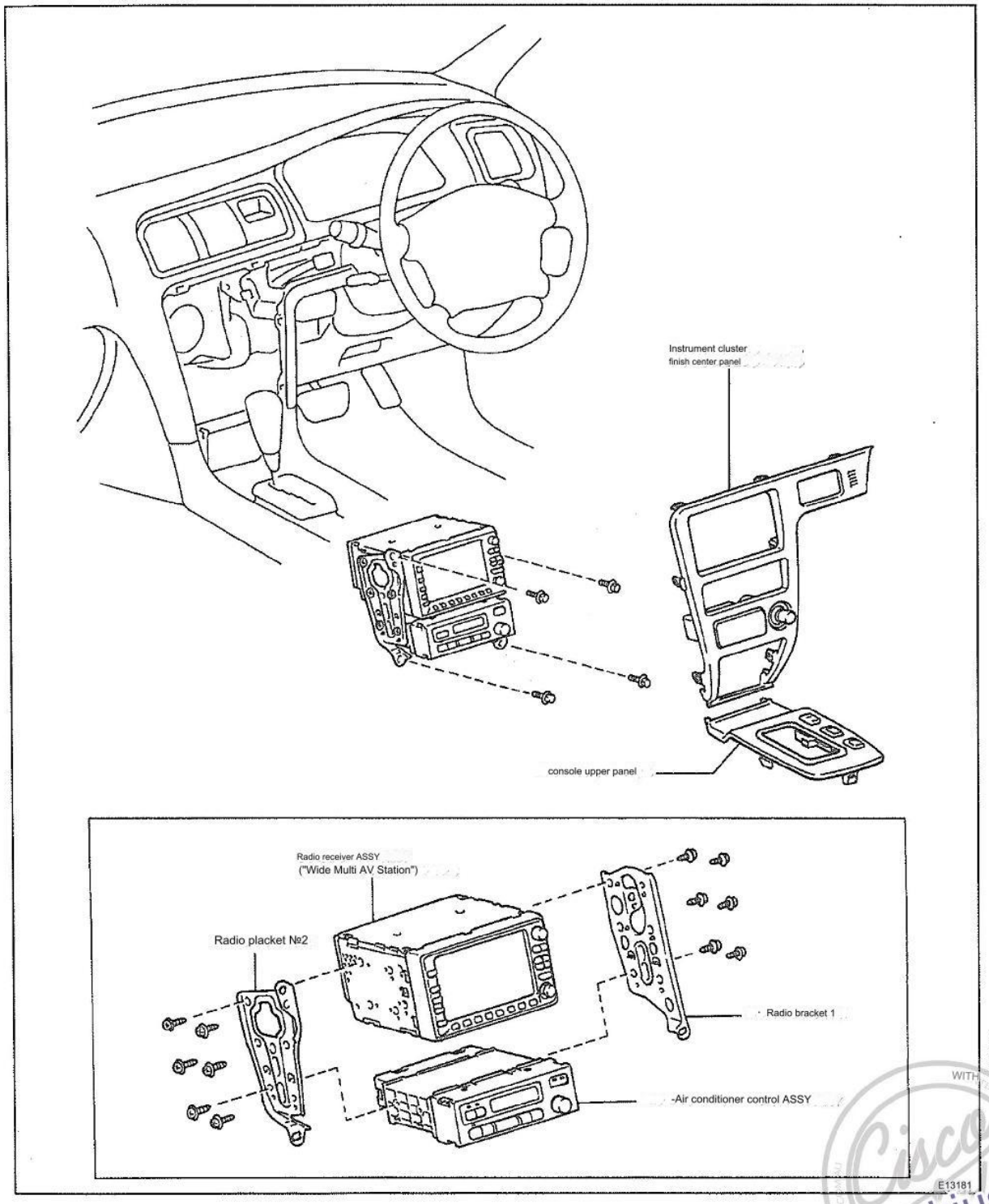
T0048630

Radio receiver ASSY
(“Wide Multi AV Station”)

Detachable exploded configuration diagram



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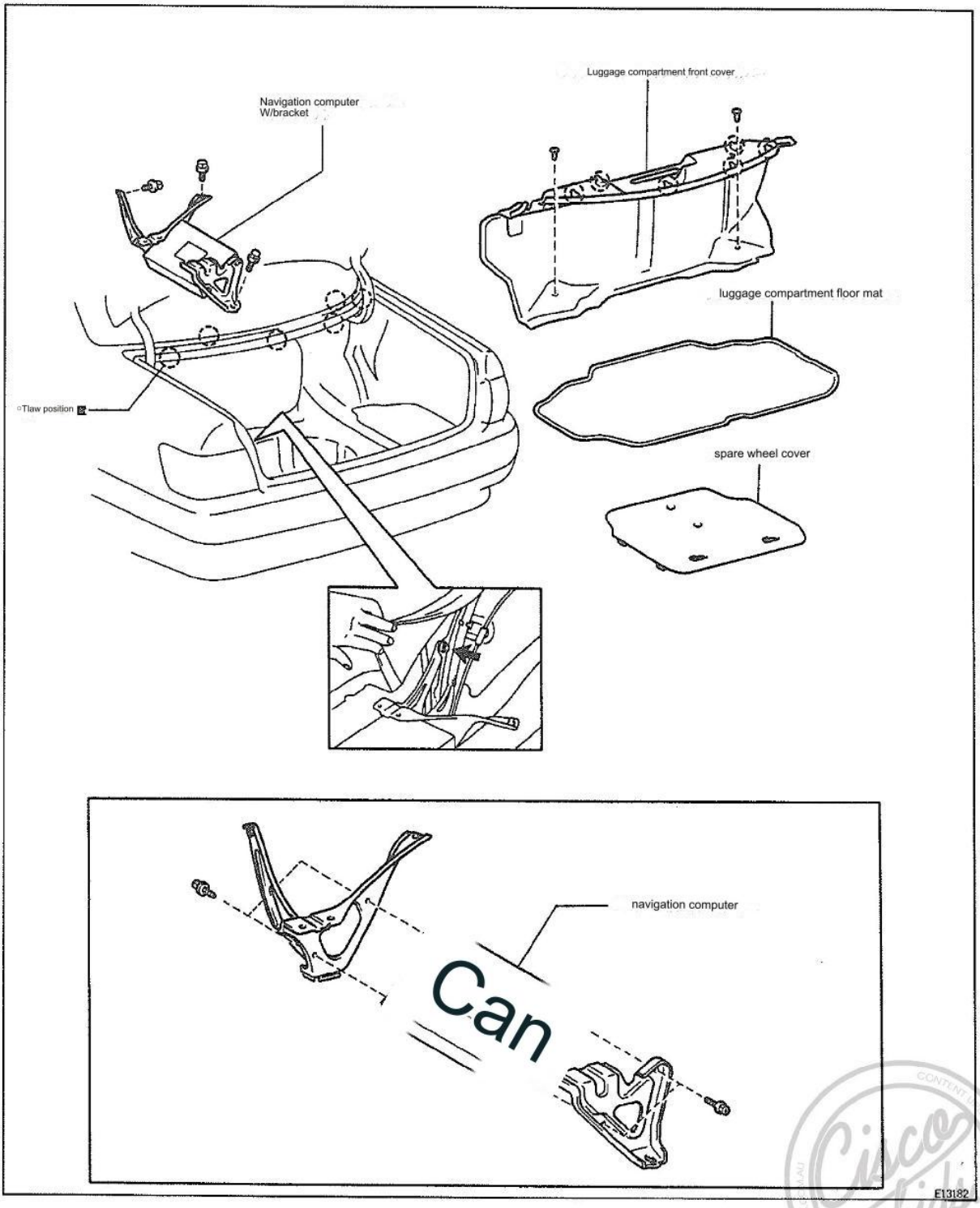
navigation computer ASSY T0049841

Detachment configuration diagram



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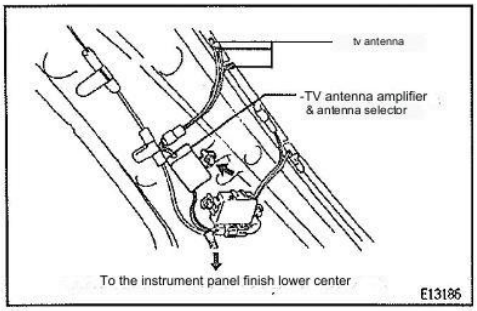
T0046840

Television antenna amplifier & antenna selector

Points to note when installing and removing television antenna amplifier & antenna selector



1 Rear seat cushion ASSY removal

2 Rear seat back ASSY removal

3 Removal of rear door opening trim RH

4 Roof side inner garnish RH removal

(1,2,3,4 refer to "Body" - "Roof Headlining")

5 Console box ASSY removal

6 Console upper panel ASSY removal

7 Instrument panel finish lower center panel removal

(Refer to "Body" and "Instrument panel" for 5,6,7)

8 Removing TV antenna amplifier & antenna selector

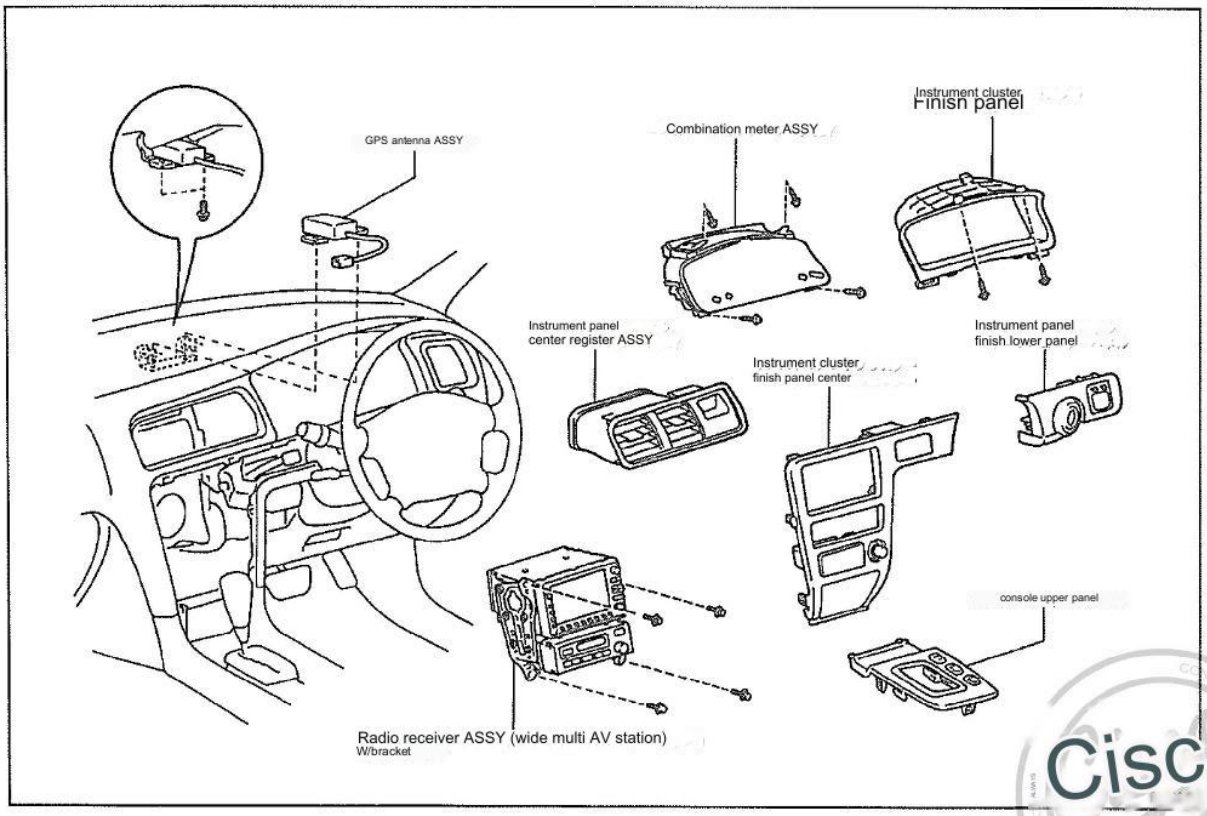
(1) Remove the bolt.

(2) Disconnect the connector and remove the TV antenna amplifier & antenna selector.

T0049842

GPS antenna ASSY

Exploded diagram



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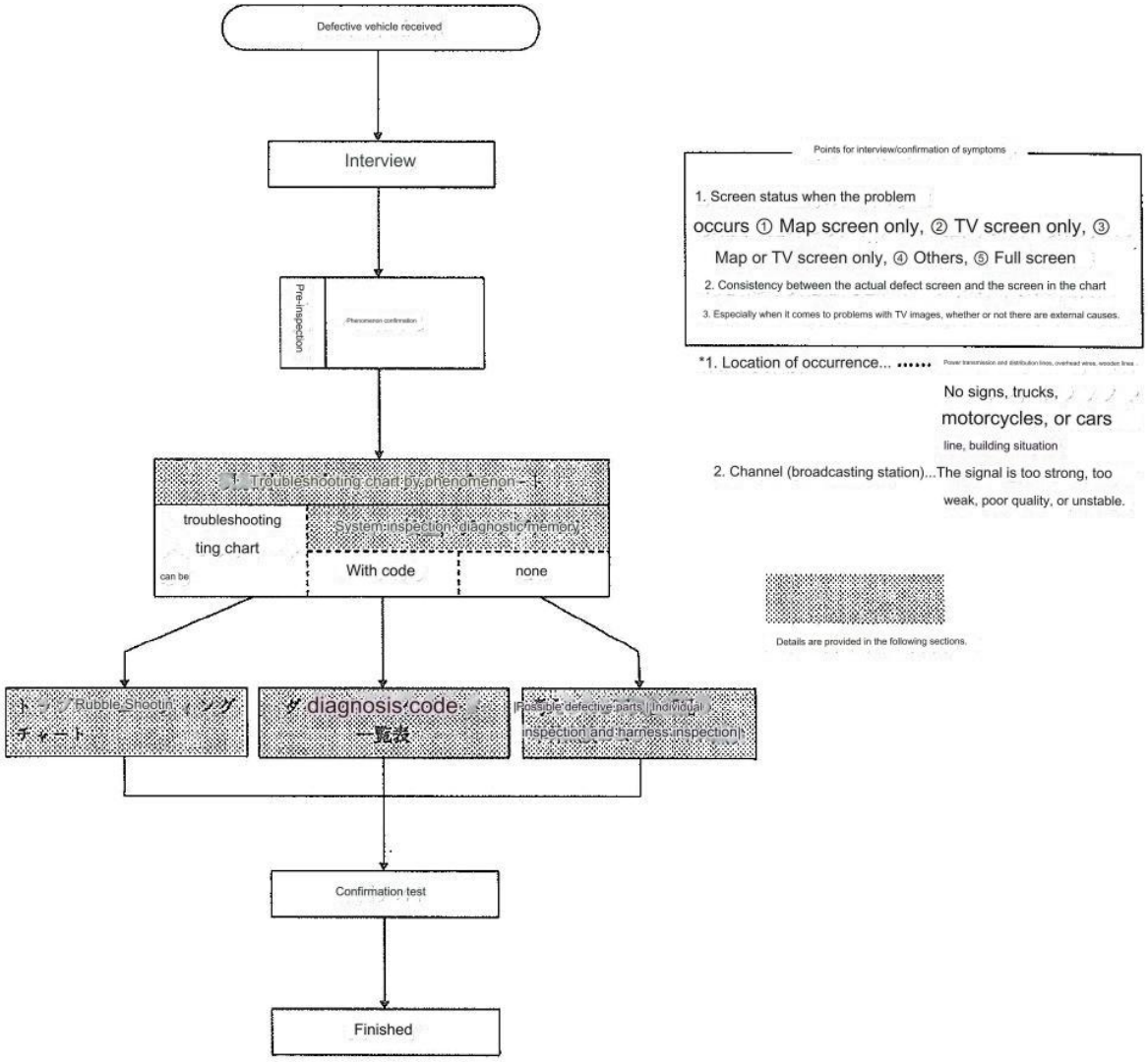
T0048820

Troubleshooting How

to proceed with troubleshooting



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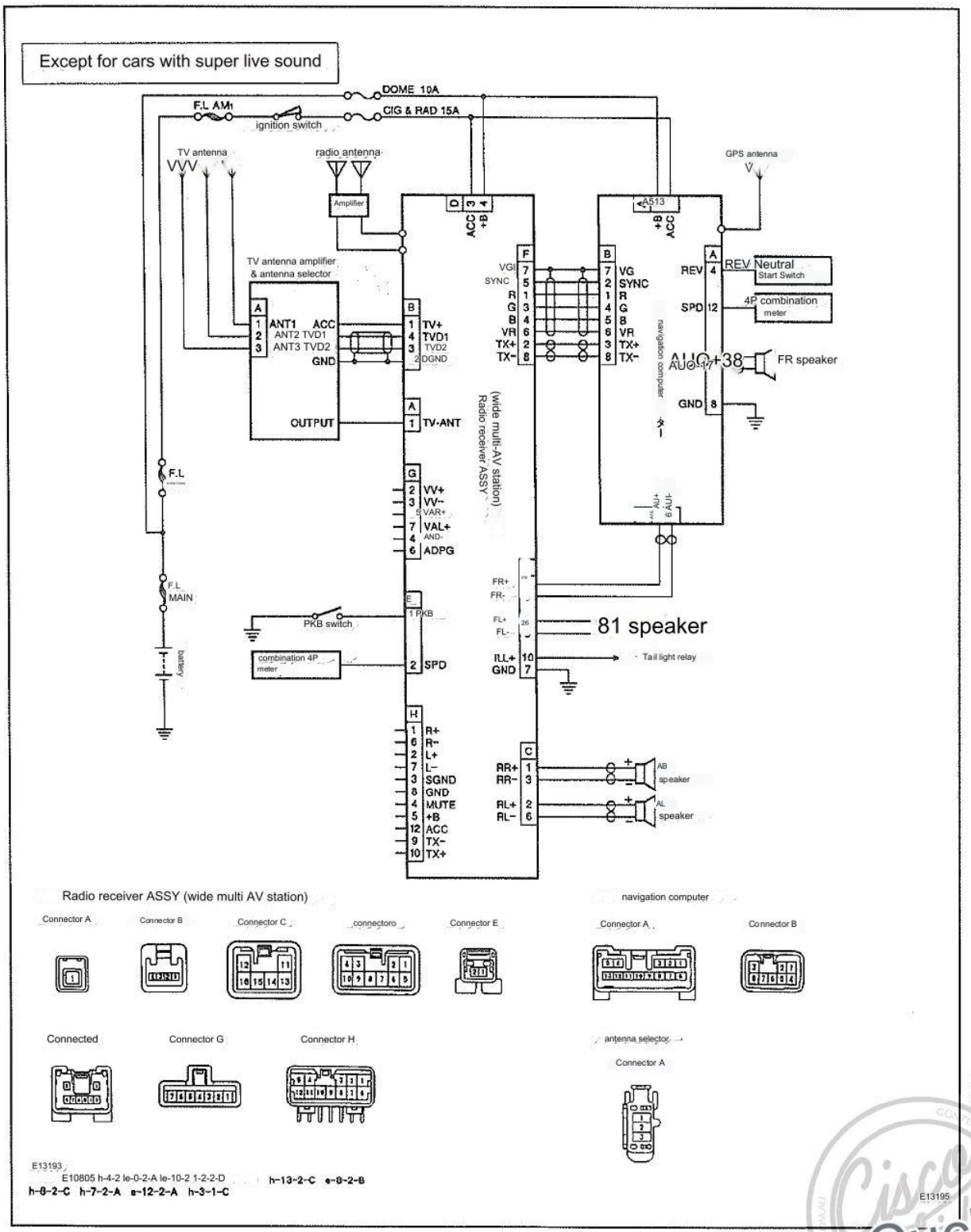
circuit diagram



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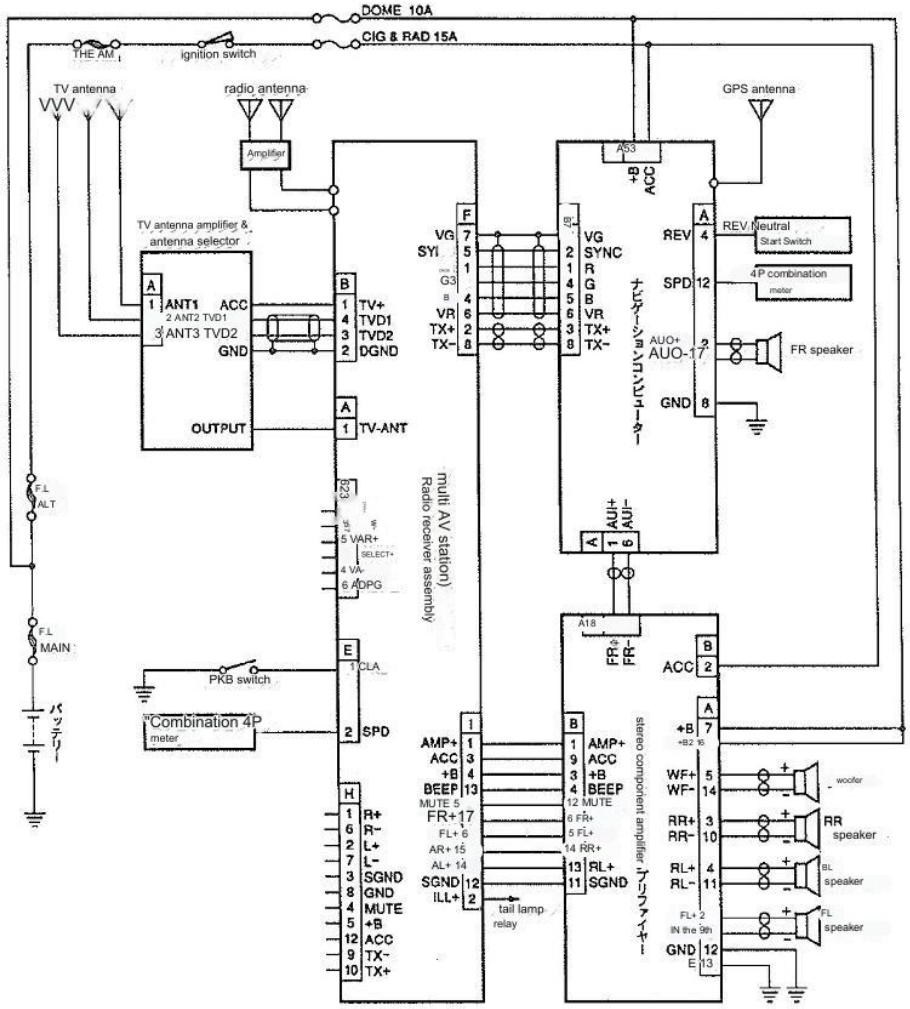
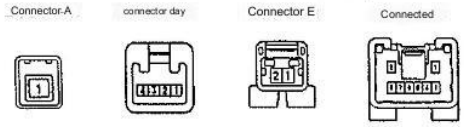
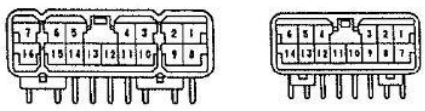
car with super live sound

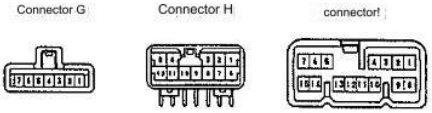


Radio receiver ASSY ("wide multi AV station")

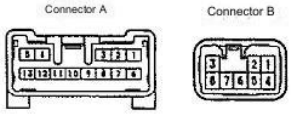


stereo component amplifier

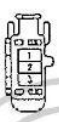




navigation computer



antenna selector



E13194
E10805 h-4-2 h-2-2-D h-8-2-C e-16-2-A e-14-2-F
h-7-2-A e-12-2-A h-15-2-A h-13-2-C e-8-2-B

E13677

18

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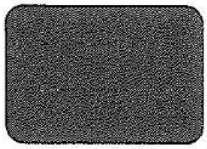
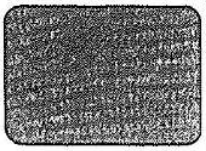
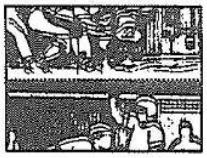
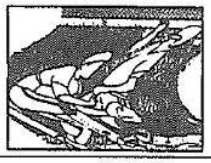
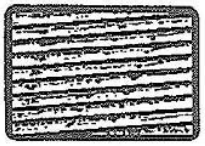
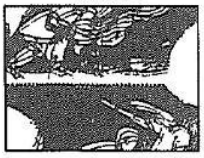
T0049521

Troubleshooting chart by phenomenon

defect		Possible defective parts						trouble	Diagnosis
Classification	Specific symptoms/two-sided condition examples	Radio receiver ASSY	Navigation TV Antenna Navigation Container Antion Pewter Tenaselect		Antenna	stereo amplifier	others	Shooting chart Na	code
whole system	Display not showing at all	○					W/H	1	
TV screen/ computer system	The screen is pitch black and does not light up at all (raster stop)  H1697	○					W/H	1	
	The screen is shining (gray, dark blue) but no image appears (image stops)  H1698	○	map screen ○ ＊1				W/H	2	
	The screen is shining white but no image appears (image stops) H9453	○	Map screen ○ ＊1				W/H	2	
	The image appears, but the screen moves vertically (vertical synchronization failure)  H4811	○		○				3	
	The image appears, but the screen is distorted (horizontal synchronization failure)  H4812	○		○				3	
	The line becomes diagonal and the image becomes unrecognizable, but it does not move vertically (horizontal synchronization failure)  H1811	○		○				3	
	Distorted image moves vertically (horizontal/vertical synchronization failure)  H4813	○		○				3	

＊1: Current location) Only when the switch is pressed (other screens are normal)

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18

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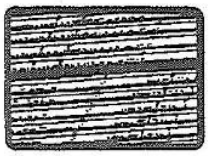
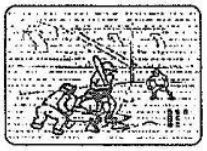
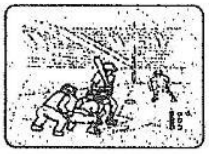
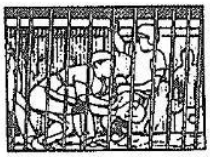
defect		Possible defective parts						Trouble shooting cheat +	Diagnosis code
Classification	Specific symptoms and screen condition examples	Radio receiver ASSY	Navigation Chausson Container	TV Antenna Navigation Antion Tena Select Antenna Pewter		stereo amplifier	others		
TV screen/computer system drawing	It becomes a diagonal line. The screen moves vertically (horizontal/ vertical synchronization failure)  H1812	○						3	
	The image appears double (ghost) H3607	○		○			Radio interference	3	45
	There is a flickering noise on the screen. (Medaka Noise Snow Noise) Medaka Noise  snow noise  H3757 H3758	○		○			· Ignition noise · Motor noise · Factory noise · W/H	3	
	Stripes appear on the TV screen (bead stripes) H4814	○	Map screen ○	○		○	· Computer noise · Factory noise · W/H	3	
	Stripes appear on the screen  H5033	○		○				3	
	The screen becomes black and white and no colors appear (color stop)	○		○					
	The entire screen turns blue-green (R " turns purple (G stop), " turns yellow (B stop)	○	map screen ○						
	The entire screen is bright or dark	○					Adjustment		
	The entire screen is bright, but there is no shading in the image.	○					Adjustment		

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defect		Possible defective parts						Trouble shooting chart Na	Diagnosis code
Classification	Specific symptoms and screen condition examples	Radio receiver ASSY	navigation pewter	Telepian Navigation Container Antion Tenaselect Tar	Antenna	stereo amplifier	others		
TV screen/computer screen	The screen does not get dark even when the light is turned on (the screen does not change to night screen)	○	○				TAIL signaling system		
	The TV screen does not appear even though the TV broadcast display permission conditions (*) are met	○					Parking brake | Rake signal system		
	TV image appears even while driving	○					Speed sensor | Signal system		71
	Cannot select a station using auto search (does not stop)	○		○					
	"It takes time to submit an image.	○	○						
	Even if I press the TV switch, the TV screen does not appear	○							
	No beep sound	○	○				W/H		
map screen	Route guidance audio does not come out or is distorted	○	○				Speaker (Front RH)		40,50
	The screen doesn't change (no message appears)	○	○						40
	``Please wait for a while" message appears, ``Can't proceed any further."		○				Defective CD-ROM		40,50 52,53
	Scroll function doesn't work	○	○				W/H		
	You can perform complex operations while driving.		○				Speedometer signal system W/H		71
	"The screen changes but it's very slow.	○	○				W/H		
	The location cannot be memorized (I forget it when IG OFF)		○				W/H		
	Do not display any map		○						40
	I have forgotten the route or destination I set last time even though I have not removed the battery (except when using the demo function)		○				W/H		
	Cursor doesn't move	○	○				W/H		
	The GS mark can be used at any time, any place. Does not appear		○		○				60,61,62

*TV broadcast display permission conditions...①Vehicle stopped (vehicle speed 8 km/h or less)
②Parking brake ON
TV images can be displayed if both ① and ② are met.

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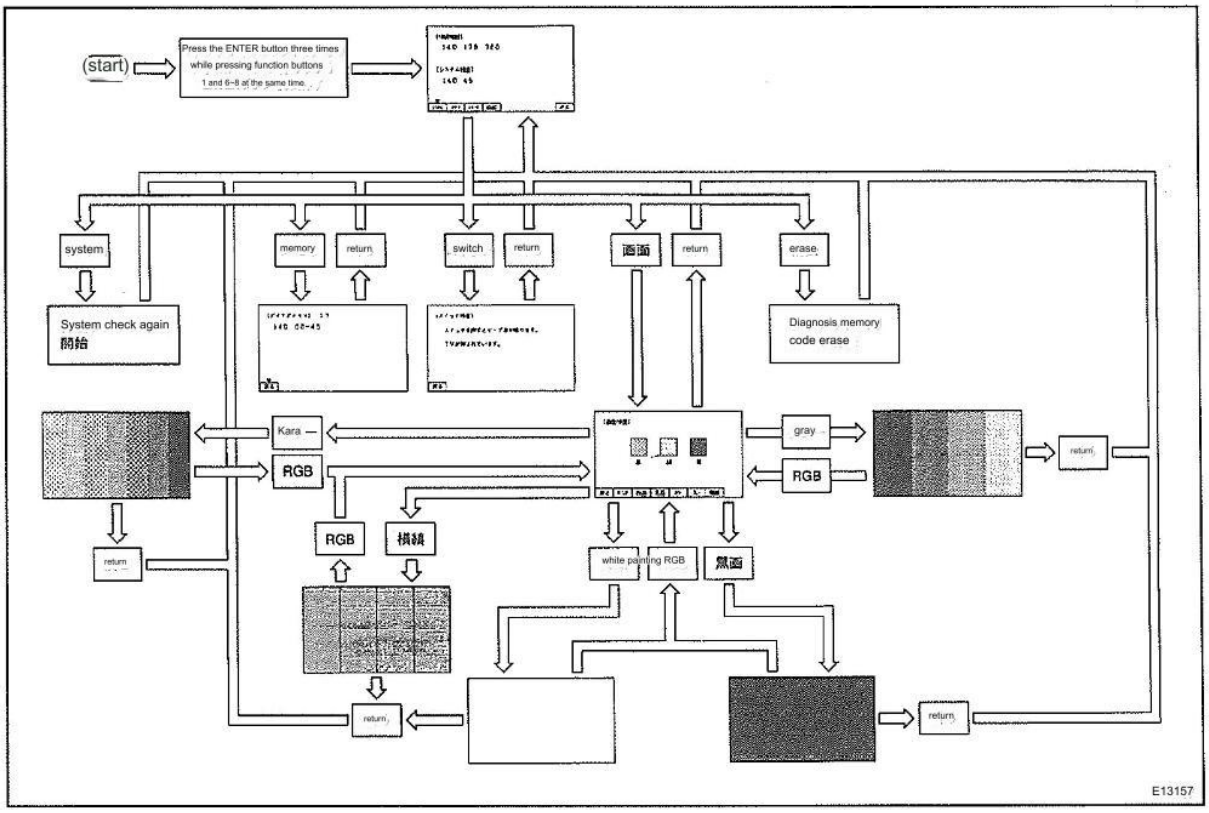
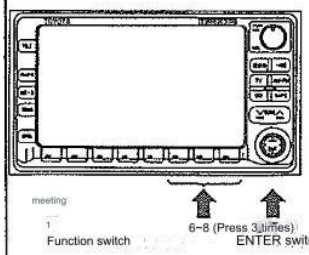
diagnosis

Diagnosis operation list



How to start and release diagnosis

Note: When starting diagnosis mode, a beep may be heard and the screen may transition to another screen. In this case, it is not considered to be a simultaneous press, so try the operation again.

boot	Startup screen	Lift
 E13198 While pressing function switches 1 and 6~8 at the same time, press the ENTER switch three times to start the diagnosis. When Diagnosis starts, you will hear three beeps and the LAN check and system check codes will appear on the startup screen.		Press the ENTER switch for more than 2 seconds.

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System check

The system check diagnoses the radio receiver ASSY (“wide multi-AV station”) and connected systems, and displays the diagnosis results. When you activate Diagnosis mode, a system check is performed automatically.

1 Start diagnosis mode

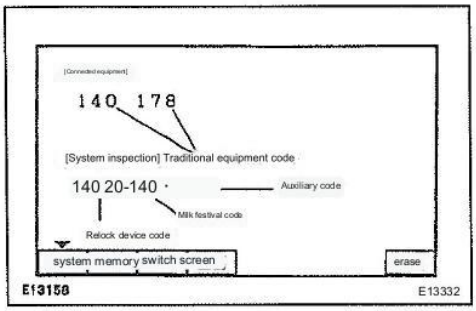
2 Read diagnosis results

<Reference> - "Connected equipment" displays the radio receiver ASSY ("wide multi-AV station") and connected equipment using the connected equipment code.

Connected device code

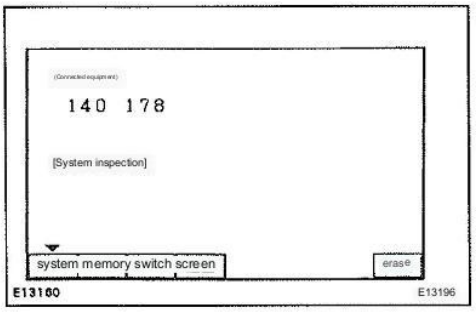
140 · · · · · · Radio receiver ASSY ("Wide multi AV station")

178.....Navigation computer



NOTE · If there are error codes, up to 6 will be displayed for each device. If there are error codes for two or more devices, "▾" will be displayed on the left side of the screen, and you can switch the display by using the cursor keys Ru.

· If there is no error code, "OK" is displayed.



Diagnosis memory

Diagnosis memory is for radio receiver ASSY (“Wide Multi AV Station) and connected systems.

Stores information when an error occurs in communication with the system.

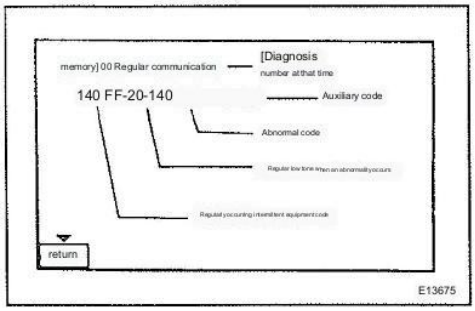
1 Start diagnosis mode

2 Diagnosis memory screen selection

(1) Press the function switch where "Memory" is displayed on the "Connected Device" and "System Check" screens to display the Diagnosis Memory screen.

3 Read memory contents

(1) Read the memory contents on the diagnostic memory screen.



NOTE · If there are error codes, up to 6 will be displayed for each device. However, if two or more devices have error codes, "▾" will be displayed on the left side of the screen, and you can switch between devices using the cursor keys. Ru.

· If there is no error code, "OK" will be displayed.

(2) To exit the diagnosis memory screen, make sure “Back” is displayed.

Press the function switch of the section that you want to use.

<Reference> - Diagnosis code list is the same as "System check". - The periodic communication number is updated every minute from 0 to 255 (displayed from 0 to FF) when ACC is ON, and completes one cycle every 256 minutes.

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Diagnosis code list

"Wide Multi AV Station (Connected Device Code 140)

Code No.	Diagnostic items	Diagnosis Content	
D1	Transmission error	An error occurred in transmission to the system indicated by the connected device code.	· W/H connector inspection (TX+, TX-) · Navigation computer inspection
D2	Regular communication no response	The system indicated by the connected device code does not respond to regular communication.	
FF	Diagnosis no response	"Diagnostic results of the system indicated by the connected device code are not notified.	Navigation computer W/H connector inspection
20	Microcomputer error	If the internal microcontroller remains abnormally reset or if the internal There is an error in communication between microcontrollers.	Inspection of applicable parts
21	ROM abnormality	There is an error in the checksum	
22	RAM exception	There is a problem with the internal RAM.	
23	Bus abnormality	There is an error in the internal path	
41	AM tuner error	There is something wrong with the AM tuner	Radio receiver ASSY "Wide Multi AV Station" inspection
42	FM tuner error	There is a problem with the FM tuner	
45	TV tuner error	There is something wrong with the TV tuner.	
4A	Panel abnormality	There is something wrong with the LCD panel.	
4B	Heater error	There is something wrong with the backlight heater.	
50	Cassette error	There is something wrong with the cassette.	
60	CD abnormality	There is something wrong with the CD	

"Navigation computer" (device connected code 178)

Code No.	Diagnostic items	Diagnosis details	place 置
D1	Transmission error	An error occurred in transmission to the system indicated by the connected device code.	———
D4	Regular communication light	Unable to receive connection confirmation instructions from "Wide Multi AV Station"	———
10	+BException	There is an error in the backup memory.	· Wire harness/connector inspection Navigation • ECU inspection ••B voltage inspection
11	ACC abnormality	There is a problem with the ACC power supply.	· Wire harness/connector inspection · Navigation ECU inspection • ACC voltage check
12	Mute error	There is an abnormality in the mute signal.	· Navigation ECU inspection · Mute wire check
20	Microcomputer error	There is an abnormality in the navigation ECU microcomputer.	Navigation ECU inspection
21	ROM abnormality	There is an error in the navigation ECU ROM.	
22	RAM exception	There is something wrong with the RAM of the navigation ECU.	
28	F-ROM abnormality	There is an error in F-ROM.	
29	F-ROM reading error	There is an error in reading F-ROM.	
2A	F-ROM writing error	There is an error in F-ROM writing.	
40	Navigation ECU abnormality	There is something wrong with the navigation ECU.	
48(*1)	VICS ECU abnormality	There is an abnormality in the VICS ECU	———
49(*1)	VICS ECU not connected	VICS ECU is not connected	
4A(*1)	FM receiver error	• There is an error in the RAM of the VICS ECU (FM receiver) • There is an error in the ROM of the VICS ECU (FM receiver) • The tuner PLL of the VICS ECU (FM receiver) cannot be locked	

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Code Na	Diagnostic items	diagnosis content	place
4B(*1)	Radio beacon abnormality	-There is an error in the RAM of the VICS ECU (radio beacon) • There is an error in the ROM of VICS ECU (radio beacon) -Unable to lock PLL of tuner of VICS ECU (radio beacon)	
4C(*1)	Optical beacon abnormality	-There is an error in the RAM of the VICS ECU (optical beacon) • There is an error in the ROM of VICS ECU (optical beacon)	———
4D(*1)	FM antenna not connected	FM antenna is not connected	
4E(*1)	Radio beacon antenna not connected	Radio beacon antenna is not connected	
4F(*1)	Optical beacon antenna not connected	Optical beacon antenna is not connected	
50	CD-ROM abnormality	There is something wrong with the CD-ROM.	
51	No DISK	CD-ROM not inserted	·CD-ROM inspection · Remove lens fogging and condensation
52	DISK difference	The inserted CD-ROM does not meet the standards.	
53	DISK can't read	CD-ROM cannot be loaded correctly	
5C(*2)	Multi CD changer (CAR-NET) error	There is something wrong with the multi-CD changer.	———
5D(*2)	Multi CD changer (CAR-NET) Not connected	Multi-CD changer is not connected	
60	GPS anomaly	Something is wrong with GPS	Navigation CPU inspection
61	GPS antenna not connected	GPS antenna not connected	GPS antenna connection check
62	GPS antenna Power supply abnormality	There is an abnormality in the power supply to the GPS antenna.	· Wire harness/connector inspection · Navigation ECU inspection
68(*3)	Card station error	- There is an error in the card station's RAM. - There is an error in the card station's ROM.	
69(*3)	Card station not connected	Card station not connected	
6A(*3)	Card station card conversation	No memory card connected to card station	———
6B(*3)	Card station card error	- There is an error in the RAM R/W test of the memory card. · There is something wrong with the memory card battery.	
6D (*3)	Card station card error	Unable to identify card	
6E(*3)	Voice recognition activation switch abnormality	There is a problem with the voice recognition activation switch.	
6F(*3)	Voice recognition microphone abnormality	Microphone not connected	———
71	SPD signal not connected	No signal from speedometer sensor	· Wire harness/connector inspection · Combination meter inspection
72	SPD pulse power supply error	There is an abnormality in the power supply to the speedometer sensor.	Navigation ECU inspection
88(*4)	CAR-NET communication no response	There was no response for connection confirmation for more than 3 minutes.	
89(*4)	CAR-NET communication abnormality	There was a transmission error	———
8A(*4)	CAR-NET fixed milk communication abnormality	There was a regular communication error.	

*1...displayed when VICS is connected
*2...Displayed when a multi-CD changer is connected
*3...Displayed when a card station is connected
*4...Displayed when connected to VICS, multi-CD changer, card station, etc. (CAR-NET communication)

18

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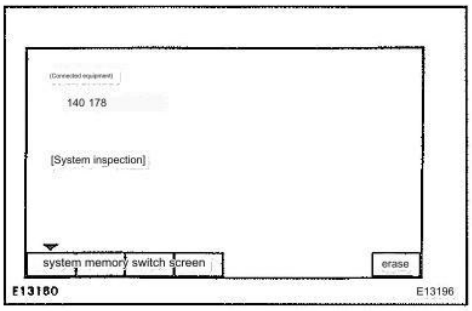


memory clear

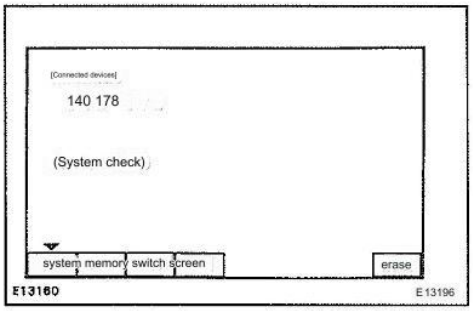
Clears the error code memory in the diagnostic memory all at once.

1 Start diagnosis mode

2 Clear memory

(1)Press the function switch where "Erase" is displayed on the "Connected Device" and "System Check" screens.

<Reference> A beep sounds for 3 seconds and the diagnostic memory stored in each device is erased all at once.



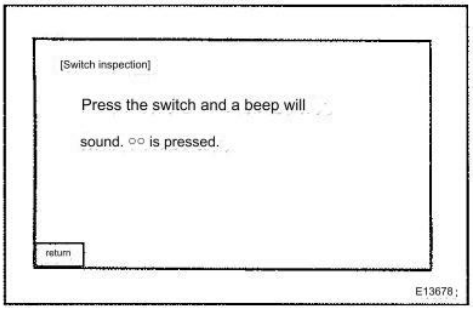
switch inspection

Switch inspection involves checking the switches on the front of the display.

1 Start diagnosis mode

2 Switch inspection screen selection

(1) Press the function switch where "Switch" is displayed on the "Connected Device" and "System Inspection" screens to display the switch inspection screen.



3 Switch inspection

(1) Press the switches on the display (excluding the OPEN and TILT switches) and check that a beep sounds.

(2) To exit the switch check screen, press the function switch where "Back" is displayed.

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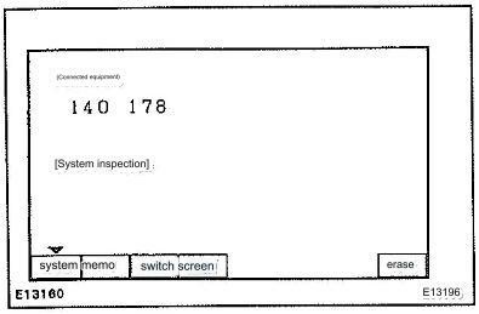


Screen inspection

Screen inspection involves checking the display on the LCD panel screen.

1 Start diagnosis mode

2 Screen inspection screen selection

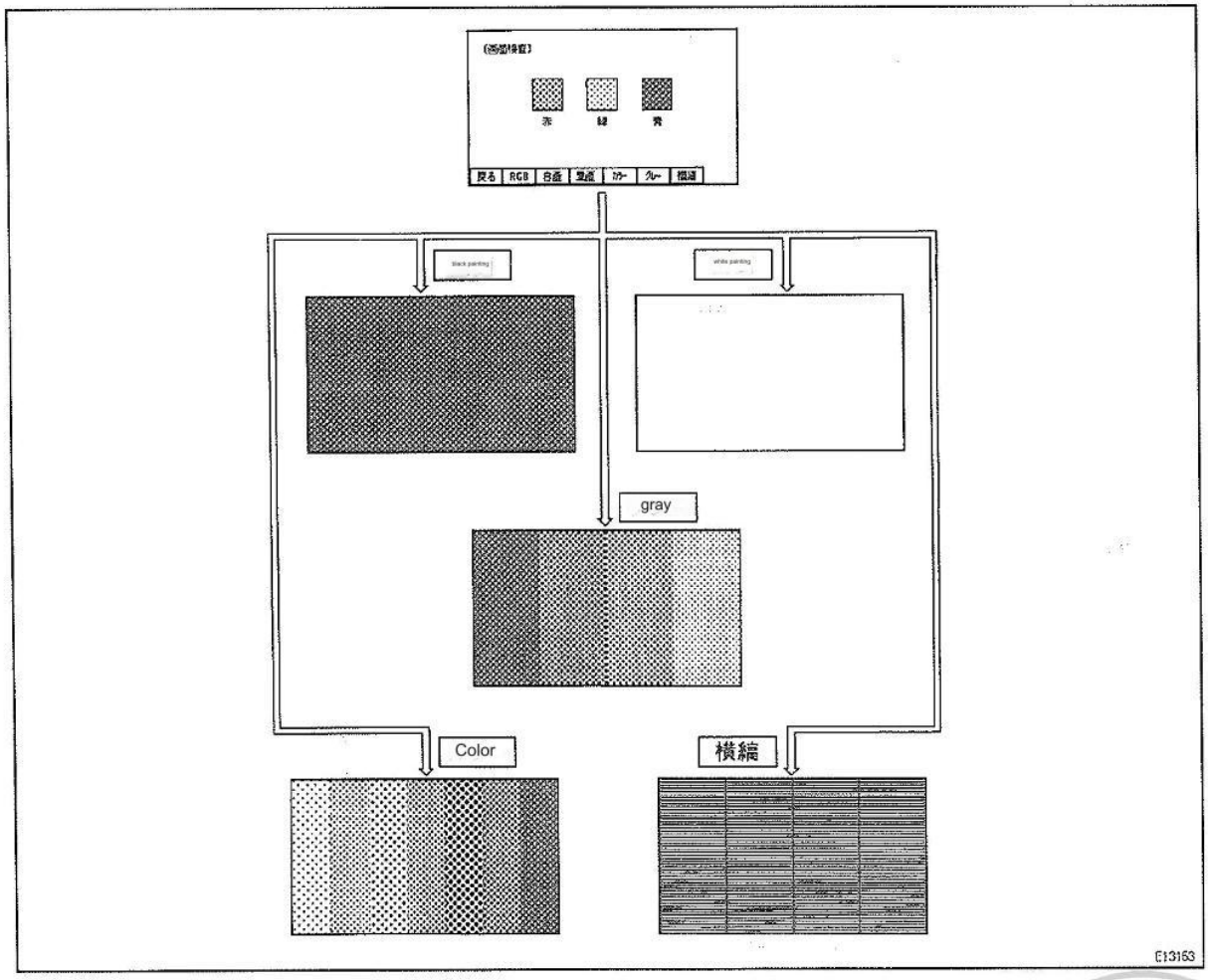
(1) Press the function switch where "Screen" is displayed on the "Connected Device" and "System Inspection" screens to display the screen inspection screen.

3 Screen inspection

(1) Switch the screen display by pressing the function switch in the area where ``White image", ``Black image", ``Color", ``Gray", or ``Horizontal draft" is displayed, and check that there are no discrepancies or omissions in the colors. Check that.

(2) To end the display check, press the function switch where "Back" is displayed.

(Reference) Display check screen transition



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Troubleshooting chart

1 Display does not display at all/The screen is completely black

Pull the parking brake and turn the IG switch ACC or ON

Does the audio work properly?
- YES → Radio receiver ASSY ("wide multi AV station") defective
- NO

※ Is the voltage between the ACC terminal (D3, 13) and earth of the radio receiver ASSY 10~14V?
- YES → · Defective wire harness · Fuse (Radio No. 2 10A)
- YES

Radio receiver ASSY defective

2 The screen is lit but no image appears.

Pull the parking brake and turn the IG switch ACC or ON

Does the map screen and TV screen not appear?
- YES → Radio receiver ASSY ("wide multi AV station") defective
- NO
- NO (Only the TV screen does not appear) → 1

*Only the map screen does not appear

Is the navigation computer output signal (connector B) normal? (Refer to "Individual inspection" P18-23)
- YES → · Radio receiver ASSY ("wide multi AV station") defective · Defective wire harness (defective grounding)
- NO

※ Is the voltage between the navigation computer's ACC (A13) terminal and earth 10 to 14 V? (Refer to "Individual Inspection" P18-23)
- YES → · Defective navigation computer · Defective wiring harness (defective grounding)
- NO

Defective wire harness (ACC power supply)

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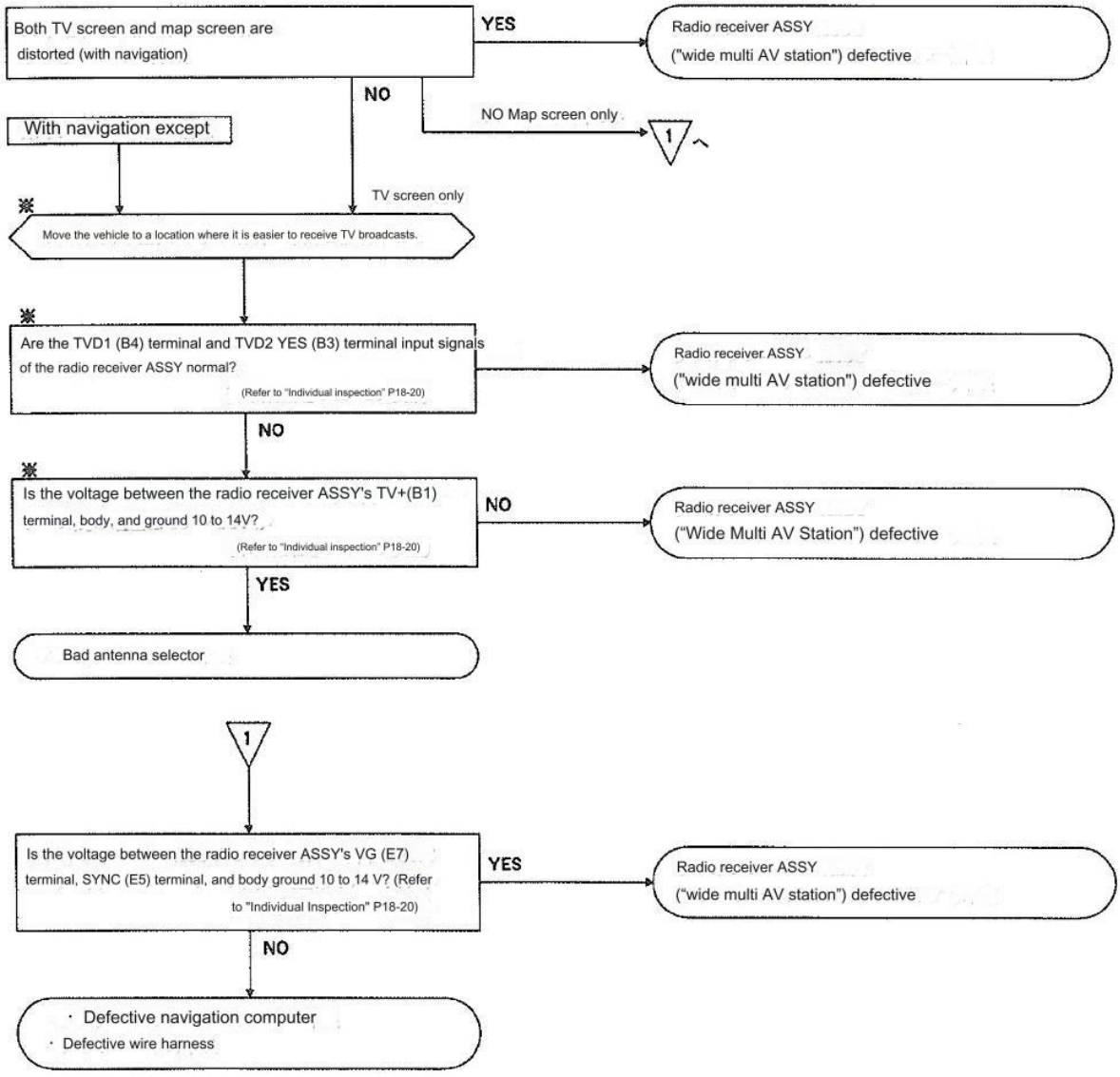
3	The screen is distorted (synchronization failure, etc.)



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TG049828

Individual inspection

<Reference> Unless otherwise specified, inspect with the vehicle W/H

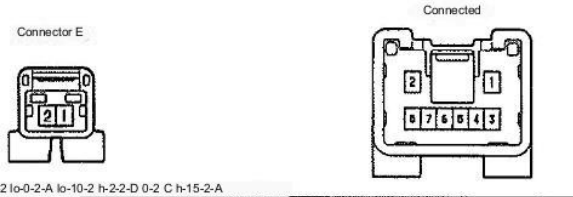
Radio receiver ASSY

("Wide Multi AV Station")

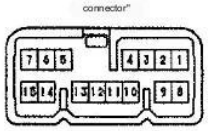
1 Reference signal check

standard

(Excluding with super live sound)



(Car with super live sound)



E10905 h-4-2 lo-0-2-A lo-10-2 h-2-2-D 0-2 C h-15-2-A

1600 connector	ID	Terminal symbol (terminal name)	Tester connection item	Measurement condition	Standard ( ) is the state of the bar in the 2 range.	disconnected Malfunction symptoms when it is outside the standard ○: When the wire is S: When the wire is shorted to the body
A	1	TV-ANT (TV Santasca)	*A1 ↔ ボデー Earth resistance	Always (W/H disconnected)	∞	Poor reception sensitivity
B	1	TV+ (TV ANT) (power output)	B1 ↔ Body DC Earth	Appearing on TV screen	10~14V	Poor TV reception
	2	DGND (ground output for shield)	B2 body earth	Normal time	There is a ditch	Increased TV image noise
	3	TVD2 (Diversity (switching signal output 2)	B3 Pode Earth	DC TV screen being displayed	Repeats 1V or less or 3V or more depending on reception status	Poor TV reception
	4	TVD1 (Diversitv (switching signal output 1)	B4 body earth	DC TV screen being displayed	"Repeat 1V or less or 3V or more depending on the reception condition.	Poor TV reception
C	1	RR+ (Rear right (+) output)	(Rear right *C1 speaker) Continuity + terminal	Always (W/H disconnected)	With continuity	No sound from rear right speaker
	2	RL+ (Rear left (+) output)	(Rear left *C2 speaker) Conductive + terminal	Normal time (W/H disconnected)	With continuity	No sound from rear left speaker
	3	RR- (Rear right (1) output)	(Rear right *C3-speaker) Continuity	Always (W/H disconnected)	Sake guide available	No sound from rear right speaker

*: Disconnect the connector and check the vehicle W/H side terminal.

18

JB278

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connector	ID	Terminal symbol (terminal name)	Tester connection	project	Measurement condition	Standard ( ) is the bar status in Selenium.	Malfunction symptoms when outside the standard ○: When the wire is disconnected S: When it is short-circuited to the body
C	6	RL- (Rear left (1) output)	(Rear floor C6 speaker) left 1st	conductor normal	Time (W/H disconnection)	With continuity	No sound from rear left speaker
D	1	FR+ (Front right (+) output)	(Navigation D1↔tion computer) A1	conductor normal	Time (W/H disconnection)	With continuity	There is no sound from the front right speaker.
	2	FL+ (Front left (+) output)	*D2~Tadazebrankyo= Speaker=	shower usually	Time (W/H disconnection)	With continuity	There is no sound from the front left speaker.
	3	ACC (ACC power input)	D3 body earth	DC IG Switch ACC		10~14V	system not working
	4	+B (+B power input)	D4+ body earth	DC always		10~14V	system not working
	5	FR- (Front right (1) output)	(Navigation D5↔tion computer) A6	conductor normal	Time (W/H disconnection)	With continuity	There is no sound from the front right speaker.
	6	FL- (Front left (1) output)	(Front left terminal *D6 speaker) one	conduction	Always (W/H disconnected)	With continuity	There is no sound from the front left speaker.
	7	(ND output for power supply)	D7 ↔ Su	Normal tense		With continuity	No sound from all speakers
	10	ILL+ (Lighting power (+) input)	D10 D7	DC	light control switch ON	10~14V	Does not switch to night screen
AND	1	PKB (parking brake switch number input)	E1D7	Pull	the DC parking brake lever	Below 1V	○ TV image does not appear even when the vehicle is stopped.
	2	SPD (Sud sensor))	E2 → D7	DC	IG switch ON, slowly rotate the propeller shaft	Repeat below 9V1V	TV images appear even while driving
F	1	R (Video signal (R) input)	F1F7AC Shiro		Map screen being displayed	0.8V or less when using AC-DC adapter, OV not available	The map screen is light blue.
	2	TX+ (AVC-LAN) (Suitable for employment (+))	–		system check	–	Map screen does not appear
	3	G (Video signal (G) input)	F3 F7	AC	Map screen being displayed	0.6V or less when using AC-DC adapter, OV not available	Map screen turns pink
	4	B (Video signal (B) input)	F4 F7	AC Shiro	Map screen being displayed	0.6V or less when using AC-DC adapter, OV not available	Map screen turns yellow
	5	SYNC (composite synchronization signal input)	F5 F7	Hz/Oscilloscope	Map screen being displayed	(lit)	○ Map screen synchronization is severely disrupted S Map screen synchronization slow
	6	VR (lens voltage input)	F6 F7	communicate	IG switch OFF	With continuity	normal
	7	VG (video ground output)	F7↔Goose body	Normal time		With continuity	normal
	8	TX- (1)) (AVC-LANY communication)	–	–	system check	–	Map screen does not appear

*: Disconnect the connector and check the vehicle W/H side terminal.

J2719
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connector	ID	Terminal symbol	Tester continuation items		Measurement conditions	基準 Values in parentheses indicate the bar status in Serenji.	Symptoms of failure when outside the standard ※: When the wire is disconnected S: When it is short-circuited to the body
I	1	AMP+ driving external amplifier) (Power output (for	11 → Body Earth	DC IG Switch ACC		10～14V	Amplifier not working
	2	ILL+ (power supply for lighting) (（+）入力）	12 ↔ body	DC	Light control switch ON	9V or above	Does not switch to night screen
	3	ACC (ACC power input)	13↔Gades	DC	IG switch ACC	10～14V	system not working
	4	+B	14 earth body	DC	Always	10～14V	system not working
	5	MUTE (mute output)	15+ Body Earth	DC	TV audio output in progress	Below 1V	TV audio is low
	6	FL+ (Front left (+) output)	* (Stereo 16 ↔ B5	conductor normal	Time (W/H disconnection)	There is a junior pass	There is no sound from the front left speaker.
	7	FR+ (Front right (+) output)	※ （ステレオアンプ） 17↔ B6	conductor normal	Time (W/H disconnection)	With continuity	There is no sound from the front right speaker.
	12	SGND (signal ground output)	112↔Earth Body	Normal time		With continuity	Increased TV image noise
	13	BEEP (BEEP output)	※ （ステレオ 113↔ Amplifier) B13	conductor normal	Time (W/H disconnection)	With continuity	No beep sound
	14	RL+ (Rear left (+) output)	* amplifier) ↔ (Stereo 114 B13	conductor normal	Time (W/H disconnection)	With continuity	No sound from rear left speaker
	15	RR+ (Rear right (+) output)	※ amplifier) ↔ (stereo 115 B14	conductor normal	Time (W/H disconnection)	With continuity	No sound from rear right speaker

*: Disconnect the connector and check the vehicle W/H side terminal.

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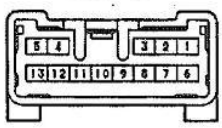
navigation computer

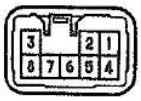
1 Reference signal check

standard

Connector A



Connector B



h-13-2-C e-8-2-B

connector	端子番号	Terminal symbol	tester connection	project	Measurement conditions	Standard () is the bar status in Selenium	Symptoms of failure when outside the standard values ○: When the wire is disconnected S: When the wire is shorted to the body
A		AUI+ input (audio signal) (+)	A1 - A8	DC radio power ON		5~7V	There is no sound from the front right speaker.
		AUO+ 2 (audio signal) ((+) output	A2 - A8	DC radio power ON		5~7V	There is no sound from the front right speaker.
	4	REV (リバースランプスイッチ信号入力)	A4 - A8	IG switch ON, DC shift lever REV	Other than REV	10~14V1V or less	Even if you go backwards, the vehicle position display continues forward.
		+B 5 (Battery power input)	A5 - A8	DC always		10 ~ 14V	Unable to memorize memory points and courses (disappears when IG OFF)
		AUI- 6 (a number with spiritual power)	A6-A8	DC radio power ON		5~7V	There is no sound from the front right speaker.
	7	AUO- (audio issue)	A7-A8	DC | When radio power is ON		5~7V	There is no sound from the front right speaker.
	8	GND1 (ground output)	A8-dozen Body	Normal time		With continuity	———
	12	SPD (Speed sensor - signal input	A12-A8	IG switch ON, slowly rotate DC propeller shaft		Repeat below 9V1V	You can perform complex operations on the map screen even while driving.
	13	ACC (ACC power input)	A13-A8	DC IG Switch ACC		10 ~ 14V	Map screen appears
B4	1	R (video signal (R) output)	B1-B7	AC. Oscilloscope	map screen displaying	0.6V or less when using AC-DC adapter, OV not available	The map screen is light blue.
	2	SYNC (composite synchronous signal output)	B2-B7	Oscilloscope	Map screen being displayed	(lit)	○ Map screen synchronization disorder severe S Map screen synchronization disorder slowly
		TX+ 3 (for AVC-LAN communication (+))		—	system check	———	Map screen does not appear
		G (image signal (G) output)	B4-B7	AC. Oscilloscope	Map screen being displayed	0.6V or less when using AC-DC adapter, OV not available	Map screen turns pink
	5	B (Video signal (B) output)	B5-87	AC Oscilloscope	Map screen being displayed	0.6V or less when using AC-DC adapter, OV not available	Map screen turns yellow
		VR 6 video signal reference) voltage output	B6- Body Earth	conduction	IG switch OFF	With continuity	———
		VG 7 (Video ground output)	B7- Body Ground	Groove normal time		There is a crossing	———
	8	TX- (for AVC-LAN communication (-))	———	—	system check	———	Map screen does not appear

JE2721

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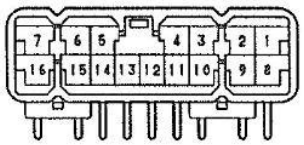
Stereo component amplifier ASSY

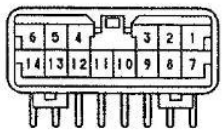
1 Reference signal check

standard

Connector A



Connector B



e-16-2-A e-14-2-F

connector	ID	Terminal symbol	tester connection	project	Measurement conditions	Standard ( ) is the state of the bar in the 2 range.	Malfunction symptoms when outside the standard ○: When the wire is cut off S: When the wire is shorted to the body
A	1	FR+ (Front right (+) output)	*A1 1↔ (Front right speaker) + terminal	usually	Time (W/H disconnection)	With continuity	There is no sound from the front right speaker.
	2	FL+ (Front left (+) output)	※A2 ↔ (フロント左 Thousand Sons ー)	shower usually	Time (W/H disconnection)	With continuity	There is no sound from the front left speaker.
	3	RR+ (Rear right (+) output)	(Rear right *A3→ speaker) +Koko	conductor normal	Time (W/H disconnection)	With continuity	No sound from rear right speaker
	4	RL+ (Rear left (+) output)	(Rear left *A4 speaker) Chikake 強す	conductor normal	Time (W/H disconnection)	There is a ditch	No sound from rear left speaker
	5	WF+ (woofer (+) output)	※A5 ↔ (woofer) + terminal	usually	Time (W/H disconnection)	With continuity	No sound from woofer
	7	+B (+B power input)	A7 small varnish	DC	Always	10 ～ 14V	Amplifier not working
	8	FR- (Front right (1) output)	*A8 one ↔ (Front right スピーカー) terminal	conduction	Always (W/H disconnected)	With continuity	There is no sound from the front right speaker.
	9	FL- (Front left (-) output)	(フロント左 *A9 speaker) Ichigo	Normal conductor (W/H disconnected)		With continuity	There is no sound from the front left speaker.
	10	RR- (Rear right (-) output)	(Rear right *A10 speaker) Ichigo	conductor normal	Time (W/H disconnection)	With continuity	No sound from rear right speaker
	11	RL- (Rear left (1) output)	(Rear left *A11 → speaker) Kazuko	Normal	Time (W/H disconnection)	With continuity	No sound from rear left speaker
	12	GND (ground output for power supply)	A12 body ground	communicate	Always	With continuity	Amplifier not working
	13	E (ground output for power supply)	A13 Body Earth	Normal time		With continuity	Amplifier not working
	14	WF- (woofer (-) output)	*A142 c (U) Normal		Time (W/H disconnection)	Light sake available	No sound from woofer
	16	+B2 (+B power input)	A16 Body Earth	DC always		10 ～ 14V	Amplifier not working

*: Disconnect the connector and check the vehicle W/H side terminal.

18

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connector	ID	Terminal symbol	Tester connection	project	Measurement condition	Standard ( ) is the bar status in Selenium.	Malfunction symptoms when outside the standard ○: When the wire is disconnected S: When it is short-circuited to the body
B6	1	AMP + (power input for amplifier drive)	Body B1↔Goose		DC IG Switch ACC	10 ~ 14V	Amplifier not working
	2	ACC (ACC power input)	Body B2 Earth		DC IG Switch ACC	10 ~ 14V	Amplifier not working
	3	+B (+8 power output)	Body B3 dozen	DC	Always	10 ~ 14V	————
	4	BEEP (Beep signal input)	("Multi AV *B4 station") 113		Normal conductor (W/H disconnected)	There is a hinoki	No beep sound
	5	FL+ (Front left (+) input)	(*Multi AV *B5↔position) 16		Normal conductor (W/H disconnected)	There is a ditch	There is no sound from the front left speaker.
		FR+ (Front right (+) input)	("Multi *B6 AV station) 17		Normal conductor (W/H disconnected)	With continuity	There is no sound from the front right speaker.
	9	ACC (ACC power output)	B9→ Potee Earth		DC IG Switch ACC	10 ~ 14V	————
	11	SGND (signal ground output)	B11 Body Earth		Normal time	There is a bridge	————
	12	MUTE (mute signal input)	Body B12↔Earth DC		Audio output in progress	Below 1V	audio is small
	13	RL+ (Rear left (+) input)	("Multi AV station *B13tion) 114		During normal conduction (W/H disconnected)	With continuity	No sound from rear left speaker
	14	RR+ (Rear right (+) input)	(*Multi *B14 AV Station) 116	導通	Always (W/H disconnected)	With continuity	No sound from rear right speaker

*: Disconnect the connector and check the vehicle W/H side terminal.

18
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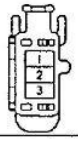
TV antenna amplifier & antenna selector

1 Reference signal check

standard

Connector A



h-3-1-C

connector	terminal number	Terminal symbol	tester connection	project	Measurement conditions	Standard () is the bar condition in range 2	Malfunction symptoms when outside of standard values
A 2	1	ANT1 (TV antenna input 1)	A1 - Body	resistance	Always	∞	Decrease in TV reception sensitivity
		ANT2 (TV antenna input 2)	A2* - Body	resistance	Always	∞	
	4	ANT3 (TV antenna skirt 3)	A3- - Body Ground	resistance	Always	∞	

*: Disconnect the connector and check the vehicle W/H side terminal.

JB2722

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19 Oil and fat/cooling water for each part

Oil, cooling water and capacity of each ••••••part *** 19 - 2

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times
steamed noodles

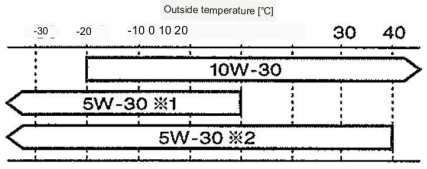
T0048105

Each part oil/cooling water and capacity

■Engine oil

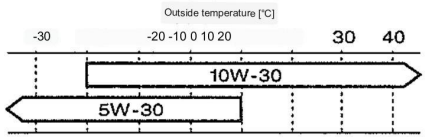
Engine model	When changing only the oil Filling volume [L]	oil and oil fill Filling amount when replacing the tank [L]
1G−FE	3.9	4.1
1JZ-GE (2WD)	5.1	5.4
1JZ−GE(4WD)	4.2	4.5
1JZ-GTE	5.1	5.4
2JZ-GE	5.1	5.4
2L-TE	4.3	5,3

Gasoline vehicle SAE viscosity



D02404

Diesel vehicle SAE viscosity



D02419

ILSAC CERTIFICATION mark

D02337

注意
- Use the oil appropriate for the outside temperature based on the table.
- The filling amount at the time of replacement is the value when oil is removed from the drain plug.
- After confirming that the old oil has drained sufficiently, drain the drain (Close the rug.
- Always make a final check of the oil level using the oil level gauge.

Confirmation method

After hiding the engine and leaving it stopped for 5 minutes, oil level Make sure that is on the F level of the gauge.

Gasoline engine oil (specified oil)

Toyota genuine clean SH (API SH／ILSAC, SAE10W-30)
Toyota genuine Neogya SH (API SH／ILSAC, SAE5W-30)
Toyota genuine clean SG (API SG, SAE10W-30)

*1.... Vehicle equipped with 1JZ-GTE engine
※2…… 1JZ-GTE エンジン搭載車以外
<参考 > 上記純正品以外では, API SG, SH または ILSAC マークの Recommended oil containing.

Diesel engine oil (specified oil)

Toyota genuine diesel oil new special II
(API CD, SAE10W-30)
Toyota genuine diesel oil new special II
(API CD, SAE5W-30)

Times house times
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term	eye		capacity Amount [L] (reference value)	designation oil 脂
Cooling water	1G−FE		6.5	Toyota genuine long life coolant "Guaranteed freezing temperature: Concentration 30% 12°C1 Concentration 50%-35°C"
	1JZ-GE		2WD: 6.9	
			4WD: 7.6	
	1JZ-GTE		M/T: 7.7	
			A/T: 8.4	
	2JZ−GE		7.4	
	2L-TE		9.0	
manual transmission oil	W57		2.6	Toyota genuine MG gear oil special II (API GL-3, SAE75W-90)
	R154		3.0	
automatic transmission fluid	A42DE		6.1	Toyota genuine auto fluid D-II
	A43D		6.5	
	A340E		1JZ-GE: 7.65	Toyota genuine auto fluid type T-III
			2JZ−GE: 8.0	
	A34IE		7.65	
	A340 H		9.6	
differential oil	front		0.7	Toyota genuine hypoid gear oil SX (API GL-5, SAE85W-90)
	ヤ		1JZ-GTE, 2JZ-GE: 1.3 (Linga 8)	Toyota genuine hypoid gear oil SX (API GL-5, SAE85W-90) "Car without LSD, [Car with Torsen LSD]
			Engines other than those listed above: 1.0 (ring gear 7.5^)	Toyota genuine hypoid gear oil LSD (API GL-5, SAE85W-90) [Vehicles with LSD other than Torsen LSD
power steering Fluid	1G−FE		0.7	Toyota genuine power steering fluid
	1JZ −GE	2WD	0.8	
		4WD	0.9	
	1JZ-GTE		0.8	
	2JZ−GE		0.8	
	2L-TE		0.8	
clutch fluid			———	Toyota genuine brake fluid 2500H
Brake fluid			———	Toyota genuine brake fluid 2500H
A/C compressor oil			———	HFC-134a "ND-OIL 8 of new refrigerant (R134a) [for piston type compressor]"

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MEMO

steamed noodles times

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20 Periodic inspection and maintenance standard values

Periodic inspection and maintenance standard values ..... 20 - 2
Engine related 20-2
シEleven-related 20-4
Periodic inspection work procedures... 20-6
Function of exhaust gas reduction device during deceleration 20 6
Exhaust power × Recirculation device function (2L-TE) 20-6

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T00S0157

Periodic inspection and maintenance standard values

Engine related

(1/2)

term / eye				Engine model 1G-FE	2L-TE
V-belt Deflection amount and tension [pushing force 98N (10kgf)]	It's a woman's evening Belt (2L-TE \1 本BYたりノ	Deflection amount [mm]	When new	11~13	7~10
			When inspected	14-18	10~14
		Tension [N{kgf}]	When new	540 635 (55-65)	440-540 (45-55)
			During inspection	245 390 (25~40)	195-345 (20~35)
	A/C under the heart	Deflection 亘 [mm]	When new	7~8.5	13 ~17
			At the time of tea ceremony	9-11	17~21
		Tension [N{kgf}]	When new	540 635 (55~65)	440 540 (45~55)
			At the time of tea ceremony	295-390 (30-40)	195 345 (20~35)
	P/S card	Deflection 亘 new [mm]	When	5.5~7	8~10
			When lit	7~9	10~15
		Tension [N{kgf}]	When new	440-540 (45~55)	←
			At the time of tea ceremony	195~345 (20~35}	←
pa ッ Te Li liquid specific gravity (Liquid temperature 20°C)			基 semi-value	1.25~1.29	←
			Liquid tank difference	0.04 unknown	←
Ignition timing [°BTDC]/[r/min]	Short circuit between Te and E terminals		M/T	8-12/700±50	—
			A/T	8-12/650±50	
	Open between Te and E terminals		M/T	7~24/700 50	—
			A/T	7~24/65050	
Injection timing (TDC stationary) メ弓ˇ丁ー刂外盘 [mm]				—	Time setting
Spout Shooting 圧 Power [MPa_{kgf/cm²}]				—	14.22~15.20 (145~155)
a イ Dollar revolutions (NV>>, non-adjustable) [r/min]			M/T	650~750	650-700
			A/T	600~700	
a イ de 儿 C.O. concentration [96]				1.0 or less	—
Completion I Do 儿 HC concentration [ppm]				800 or less	—
de イ ー ゼ le sumo ku concentration [96]				—	40 or less
pa ル Book リ a La (when cold) [mm]			IN	0.16 0.25	0.20~0.30
			EX	0.25-0.35	0.40~0.50
Cylinder head tightening torque [N•m {kgf•cm}]				63.7 (650)	※1
イ >テー ▽ 21-hour lower-loading soup soup-heart evening [N·m {kgf•cm}]				17.7 (180)	※2
工†ー乂421-under-loading soup-heart evening [N·m {kgf•cm }]				25.5 (260)	*2
圧 Reduction 乐 Power (at 250r/min) [MPa {kgf/cm²}]			Standards	1.27 (13.0)	3.04 (31.0)
			limit	0.98 (10.0)	1.96 (20.0)
			simple difference	_0.1_{1,0} or less	0.49_{5.0} or less
Spa ー Kupragi + [mm] ッ プ			基Semi-	1.0~1.1	—
			limit	—	—
Raje ー Yu Ichigo Valve opening pressure [kPa {kgf/cm²}]			Reference value	74-103 (0.75~1.05)	93 122 (0.95~1.25)
			limit	56 (0.6)	78 {0.8}

*1. No need to use the plastic area. *2. No inspection required due to the use of metal gaskets.

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(2/2)

term eye ＼ Engine model			1JZ-GE	2JZ-GE	1JZ-GTE
V-ribbed belt tension point	It's a woman's evening. A/C•P/S ベルト		In indicator inspection (Non-adjustable)		
specific Liquid (Liquid temperature 20°C)		Standards	1.25 1.29	←	←
		Liquid tank difference	0.04 unknown	←	←
Ignition timing [° BTDC]/[r/min]	TeCG(1JZ-GE) Tz→E (excluding 1JZ-GE | Short circuit between terminals)	M/T	—	—	8-12/70050
		A/T	8 12/650 +50	←	←
	Te→CG (1JZ-GE) TznE (excluding 1JZ-GE) |Open between terminals	M/T	—	—	8 or more/700±50
		A/T	5 or more/650±50	←	8 or more/650±50
ア standard ド number of revolutions (NV, non-adjustable) [r/min]		M/T	—	—	650~750
		A/T	600-700	←	←
ア standard de ル C O degree [%]			1.0 or less	←	←
ア 1 dollar HC concentration [ppm]			800 or less	←	←
pa le ブ ク Li ア La ns (when cold) [mm]		IN	0.15~0.25	←	←
		EX	0.25 0.35	←	←
Cylinder head tightening torque [N•m {kgf•cm}]			No inspection required due to tightening in the plastic region		
Intake manifold tightening torque [N•m {kgf•cm}]			No inspection required due to the use of metal gaskets		
Exhaust manifold tightening torque [N•m {kgf•cm}]					
pressure (at 250r/min) [MPa {kgf/cm²}]		Reference value	1.27 (13.0)	1.32 (13.5)	1.23 (12.5)
		limit	1.08 (11.0)	1.13 (11.5)	0.88 (9.0)
		Cylinder difference	0.1_{1.0} or less	←	←
spark plug gap [mm]		Standards	1.0~1.1 *1	←	←
		limit	1.3	←	←
Radiator cap opening pressure [kPa {kgf/cm²}]		Reference value	74-103 (0.75~1.05)	←	←
		limit	59 (0.6)	←	←

*1. No need for major adjustments when using Shirokane Juku.

steamed noodles times
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Chassis related

(1/2)

term / eye \ Vehicle model			E-GX100 KD-LX100	E-JZX100 E-JZX101	E-JZX105
Steering wheel play (at the outer part of the steering wheel) [mm] (during hydraulic operation)			0-30	←	←
front wheel alignment	Side slip (per 1m) [mm] Toe-	in	0-5	←	←
	inspection standard value	[mm]	1±2	←	0±2
	Camber inspection standard value	[pass]	0°00' 45'	0°00' 45' -0°15'45' (Tourer S, Tourer V Luran, Luran G	-0°15'45'
	Caster inspection standard value	[Watari]	5°45' 45'	←	4°30'45'
	King pin angle inspection standard value (reference value) []		9°00'45'	←	8°45'45'
rear wheel alignment	Toe-in inspection standard value	[mm]	2±2	←	←
	Camber inspection standard value	[degrees]	-0°30'45'	-0°30' 45' -0°40' 45' (Tourer S, Tourer V Luran, Luran G/	-0°15'45'
Brake pedal [mm]	Free (no negative pressure)		1~6	←	←
	Remaining pedal pressure [Pedal force] 490N (50kgf)] (with engine ON)		82 and above	←	←
Parking Pre — ±	Lever pull [Number of notches] [Lever type, operating force 196N {20kgf})		5~8	←	—
	Depress the pedal [Number of notches] [Foot type, operating force 290N {30kgf}]		5~7	←	←
	Brake effectiveness	Braking force	20% or more of the vehicle weight at checkout		
Brake lining thickness [mm]		Standards	2.0	←	←
		limit	1.0	←	←
Brake drum inner diameter [mm]		Standards	176.0	←	←
		limit	177.0	←	←

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(2/2)

term / Vehicle model			E-GX100 KD-LX100	E-JZX100 E-JZX101	E-JZX105
Disc brake パッド FO[mm]	Before 輪	Standards	12.0	11.0	←
		limit	1.0	←	←
	rear 輪	basic Standards	12.0	10.0 12.0(75-V,ルイ ー>G)	10.0
		limit	1.0	←	←
disc brake Thickness of mouthpiece [mm]	Before ring	basic	22.0	25.0 32.0 (ツアラーV, ルラーンG)	25.0
			20.0	23.0 30.0(75-V,ルイ ー/G)	23.0
	rear ring	Standards	10.0	10.0 16.0(75-V,ル5-ゝG)	10.0
		Limited	9.0	9.0 15.0 (y75-V, ル5->G)	9.0
Brake effectiveness (Note) All of the front wheels are locked, making it difficult to measure. In that state, it is considered to be compatible with the sum.	control	rear wheel sum	10% or more of axle load		
	Help	Difference between left and right wheels	8% or less of axle load		
	Rikiso	sum	50% or more of the vehicle weight when running		
clutch pedal [mm]	play (Hataba ル上)		5-15	←	—
	uncut stroke		25 or more	←	—
wheel bearing After axial movement 昼 [mm]	Before	ring	0.05 or less	←	←
		kanji	0.05 or less	←	←
Wheel nut tightening torque	[N•m_{kgf•cm}]		103 (1050)	←	←
タ ヤ り [mm]			1.6 Next time	←	←
タ ヤ 空 気 圧			another Table of 参 contents		

Yuuki → Air pressure (general, high speed, same C) [kPa {kgf/cm²]]

タ イ ヤ sa Z	Before kanji	rear ring
185/70R14 88S	210 (2.1)	
195/65R15 91H	200 (2.0)	
205/65R15 94H	190 (1.9)	
205/60R15 91H	200 (2.0)	
205/55R16 89V	230 (2.3)	
225/50R16 92V	—	240 (2.4)

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times Congratulations

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Periodic inspection work procedure

For items not listed here, perform work in accordance with the Toyota Periodic Inspection Procedure Manual (Part No. 69644, issued in May 1995).

Function of exhaust gas reduction device during deceleration

Fuel cut device

M/T car

(1) After warming up the engine, do not operate the dashpot, put your finger on the injector, increase the engine speed to 3500 r/min or higher, and return the throttle lever to activate the injector. Check that the vibration stops momentarily.

A/T car

(1) After warming up the engine, put your finger on the injector and turn the engine. When the speed is increased to 3500r/min or more and the throttle lever is returned, Confirm that the vibration caused by the injector operation stops momentarily.

Function of exhaust gas recirculation device (2L-TE)

(1) After the engine, vacuum the EGR valve during idle operation. Check that negative pressure is applied to the hose. When
(2) the engine speed is increased to approximately 1500 r/min, the EGR Check that negative pressure is applied to the vacuum hose. (3) Check that there is no negative pressure applied to the vacuum hose of the EGR valve during idling operation with water temperature below 55℃. In addition, to check the negative pressure applied to the vacuum hose, attach a vacuum gauge to the vacuum hose on the EGR valve side. Install the vacuum gauge with the engine stopped.

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